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DETERMINANTS OF HEALTH PROMOTION BEHAVIOR
IN ACTIVE DUTY AIR FORCE
PERSONNEL

by

Bridgette J. Grabowski

A thesis submitted in partial fulfillment
of the requirements for the degree of

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in

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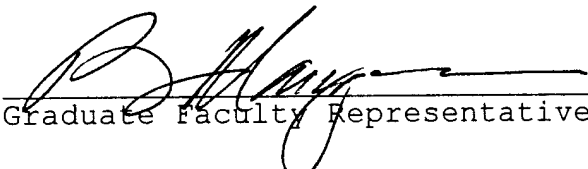
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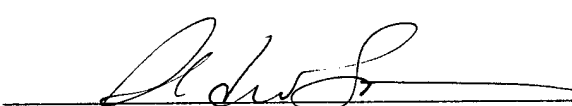
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ABSTRACT

Today's health care system has increasingly focused on health promotion and disease prevention activities. Within the United States' Air Force, emphasis has also been placed on health promoting lifestyle activities. However, the Air Force has a paucity of research regarding health promotion behavior and characteristics that influence a healthy lifestyle. The purpose of this research study was to determine the extent perceived locus of control and demographic factors, as selected factors of Nola Pender's Health Promotion Model, can predict health promotion behavior in a random sample of 217 active duty AF personnel assigned to a southwestern base. The results of the Multidimensional Health Locus of Control scale, Health Promotion Lifestyle Profile II, and a researcher-devised Biographical Data Sheet were analyzed using descriptive statistics and multiple regression. The findings of this study suggest that there is no predictive relationship between self-reported perceived locus control, demographic characteristics, and health promotion activities of active duty Air Force personnel.

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CHAPTER 1

INTRODUCTION

Background and Significance

Increased attention has been given to health promotion and disease prevention activities within today's ever-changing health care system. In addition, health continues to be a highly valued and important personal asset. Nola Pender (1987) has identified health promotion, disease prevention, and a lifestyle of wellness as issues that promote quality of life and personal satisfaction, ultimately reducing health care expenses.

Florence Nightingale's work is the earliest historical influence regarding health promotion in nursing practice. She identified simple principles for nurses to follow to assist in the preservation of health (Spellbring, 1991). Nightingale states, "the very elements of what constitutes good nursing are as little understood for the well as for the sick. The same laws of health or of nursing, for they are in reality the same..." (Nightingale, 1954, p. 125).

Today, health and health promotion are fundamental concepts for nursing practice (Spellbring, 1991). The American Nurses' Association (ANA) Social Policy Statement reflects nursings' commitment to the promotion of health and links the nature and scope of nursing practice to the phenomena of concern to nurses which is defined as "human responses to actual or potential health problems" (ANA, 1995, p. 6). The Standards of Clinical Nursing Practice (ANA, 1991, p. 1) describe the responsibilities of the nursing profession and declares "nursing care may be provided in the context of disease or injury prevention, health promotion, health restoration, or health maintenance". These statements illustrate nursing's commitment to the promotion of the client's well-being.

Within the United States (U.S.) Air Force (AF), emphasis has also been placed on health promotion activities. Military bases are analyzing and revising health promotion strategies in order to effectively target high risk groups. The need for preventive services and health promotion is significant in terms of reducing health care costs, improving the health and well-being of military personnel and their families, and ensuring a qualified military force (Johnson, Harsha, Powers, Webber, & Berenson, 1993).

Readiness, both physical and mental, are universal goals within the military environment. By maintaining a state of readiness, the AF community encourages and supports high level wellness and a personal commitment to health. In order to maintain a state of military readiness (prepared to deploy), accessible health care, wellness centers, nutrition courses, support programs, and exercise activities are available to AF beneficiaries.

In addition, limited information exists regarding health promotion behaviors of the active duty AF member. Historically, most health promotion research has been accomplished on white middle-class male professionals (Levin, 1987; Pender, Walker, Sechrist, & Frank-Stromberg, 1990; Weitzel & Waller, 1990). In comparison, minorities' (ethnic and female) health promotion activities have been overlooked. The AF is comprised of an increasing number of female and of a variety of culturally diverse personnel. The literature also illustrates many factors influence health status and activities, but with mixed results (Duffy, 1989). In order to maintain a state of military readiness within the infrastructure, additional research that is sensitive to the AF environment and demographics, is needed to more accurately predict determinants of health promoting lifestyles of AF personnel. Implementation of new research

will increase readiness, decrease health care costs, and increase the well-being of military personnel.

Pender's 1987 Health Promotion Model (HPM) emphasizes high level wellness and self-actualization, which ultimately improves a person's sense of well-being and health status in the absence of a specific disease state. Pender's HPM (1987) will be utilized as the theoretical framework for this study because of its health promotion emphasis and included variables.

Pender postulates that individual perceptions relate to health promoting behaviors. Importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health status, perceived benefits of health promoting behaviors, perceived barriers to health promoting behaviors influence the decision-making process of health promoting behavior and are therefore precursors to wellness (Pender, 1987).

Additionally, Pender (1982) theorizes that modifying factors relate to personal health. Demographic (age, sex, race, ethnicity, education, and income), interpersonal (expectations of significant others, family patterns of health care, interactions with health professionals), biologic characteristics (percent body fat, total body weight), situational factors (environmental constraints, health promotion options available), and behavioral factors

(previously acquired knowledge and skills) can also determine the extent and success of health promotion activities by exerting influence through cognitive-perceptual mechanisms that affect behavior (Pender, 1987).

Two of the HPM's components (perceived locus of control and demographics) are believed to be predictors of health promotion behavior in active duty AF personnel. Further research in the area of health promotion with all groups will contribute to achievement of health for all by the year 2000.

Purpose Statement

The purpose of this study was to determine the extent selected variables, suggested by Pender's 1987 HPM, could predict health promotion practices of active duty AF personnel. These factors included: locus of control and demographic characteristics (age, gender, marital status, ethnicity, income, children living in the home, education, military rank, occupation, and hours worked per week).

CHAPTER 2

CRITICAL REVIEW OF THE LITERATURE

Introduction

Health promotion has become increasingly important in today's health care environment. It is recognized that prevention of disease entities and the promotion of health related behaviors will decrease health care expenses and improve quality of life within every demographic arena (United States' Department of Health and Human Services (U.S. DHHS), 1990).

Within the military setting; age, gender, marital status, cultural diversity, income, children living in the home, education, military rank, occupation, and hours worked per week are believed to determine multiple patterns of health care beliefs and practices. Additionally, health promotion has been shown to be determined by and expressed with social and cultural variations. Consequently, health promotion activities should be directed to the unique individual's needs and characteristics in order to decrease

the occurrence of specific illnesses and enable the individual to attain self-actualization (Pender, 1987).

The purpose of this research study has been to determine the extent to which selected demographic and sociocultural factors, suggested by Pender's 1987 Health Promotion Model (HPM), can predict health promotion practices of active duty Air Force (AF) personnel. The factors selected for this study included: locus of control, age, gender, marital status, ethnicity, income, children living in the home, education, military rank, occupation, and hours worked per week. The selection of these factors was supported by the literature reviewed and clinical experience of the researcher. In particular, the concepts analyzed in the literature review are health promotion, health promotion models, locus of control, and demographic and military research related to health promotion behavior.

Health Promotion

There are varying perceptions and definitions of the health promotion concept. Health promotion has been referenced in the literature as disease prevention methods, health education, and health maintenance (King, 1994). In fact, health promotion may involve all of these concepts and is considered as health care directed toward self-actualization and total well-being of individuals, families,

communities, and societies (Pender, 1996). Spellbring (1991) stated that all of the preceding activities are included in health promotion and that health promotion should be viewed as a separate component of medical and nursing care. Additionally, Laffrey (1985) and Brubaker (1983) cited that health promotion is any action taken toward achieving a higher level of health and well-being.

Pender further stated that health promotion is "not disease or health problem specific, it is an 'approach behavior', and seeks to expand positive potential for health" (Pender, 1987, p. 5). Health promotion strives to increase the occurrence of good health, whereas health prevention attempts to resist the occurrence of a disease process. Health promotion is a multidimensional, positive, dynamic process (Pender, 1987). The goal of health promotion is sustaining healthy behaviors as a significant part of one's lifestyle.

Health care providers have long realized the importance of health promotion activities. Healthy People 2000, initiated by the United States' (U.S.) Department of Health and Human Services (U.S. DHHS, 1990), has set goals to improve the health of all Americans by 2000. The initiative's aim is characterized by a reduction in preventable deaths and disability, enhanced quality of life, and increased lifespan (U.S. DHHS, 1990). The Department of

Health and Human Services' (DHHS) objective is to "reduce the death rate by 20 percent to no more than 340 per 100,000 people aged 25 through 64" (U.S. DHHS, p. 577).

The Surgeon General reported that at least 50% of the deaths in the U.S. each year were due to an unhealthy lifestyle (U.S. DHHS, 1980). In 1994, a report from the DHHS highlights this continued trend in the U.S.. The report declares approximately 50 percent of deaths in people under age 75 years of age are caused by personal behaviors that can be adjusted (U.S. DHHS, 1994). In addition, it reports other significant causes of premature death which pertain to environmental factors under human control. Tobacco, diet, inactivity, alcohol, microbial agents, toxic agents, firearms, sexual behavior, motor vehicles, and illicit drugs were the top 10 underlying causes of death in 1990 (Whitmer, 1993). These behaviors add to the mortality and morbidity of U.S. citizens, are in the control of the individual, and can be classified as disease prevention and health promotion factors.

Health Promotion-Disease Prevention: Objectives for the Nation (U.S. DHHS, 1980) summarized the concept of health promotion as a combination of health education and related environmental, organizational, and economic interventions that support activities which promote health and a healthy lifestyle. Issues addressed included:

smoking, alcohol abuse, drug abuse, nutrition, physical fitness, and stress management.

Health Promotion Models

Becker's Health Belief Model (HBM) was designed in the 1960s as a basis for exploring why some people who are disease-free take actions to prevent illness, while others fail to take protective actions (Pender, 1996). The model is derived from social-psychological theory, primarily the work of Lewin, "who conceptualized that the life space in which an individual exists is composed of regions, some having negative valence, some having positive valence, and others being relatively neutral" (Pender, p. 35). Health protective behavior is "any behavior performed by a person, regardless of his or her perceived or actual health status, in order to protect, promote or maintain his health, whether or not such behavior is objectively effective toward that end" (Harris & Guten, 1979, p. 18). The HBM is a conceptual framework that investigates an individual's perceptions and their association with health promotion behavior. Ultimately, the model examines the factors motivating an individual to engage or not to engage in health promoting activities.

The model viewed preventive health action as likely to be performed by persons who

feel threatened by a disease (perceive themselves susceptible to it and perceive its consequences to be severe), perceive the benefits of preventive action to outweigh its costs, and are exposed to some behavioral cues of action, all of the former being modified by a set of demographic, structural, and social psychological factors. (Harris & Uten, 1979, p. 18)

Although Becker defined his model prior to distinction between health promotion and disease prevention activities, he expanded the framework to include more than preventive health actions. Numerous studies indicate that the HBM can predict intentions to practice health-related behaviors (Damrosch, 1991). While the HBM primarily focuses on illness prevention, Pender uses its framework of health protective behavior to further illustrate the concept of health promotion.

An ecologic approach to health promotion behavior was taken by McLeroy (McLeRoy, Bibeau, & Stecker, 1988). He focused his attention on the environmental causes of behavior and identified environmental interventions (Spellbring, 1991). McLeroy's model views behavior as influenced by "intrapersonal factors that include characteristics of the individual; interpersonal processes and primary groups; institutional factors; community

factors; and public policy" (Spellbring, p. 808). Pender's HPM also reviews intrapersonal, interpersonal, and extrapersonal factors and their impact on health promotion behavior.

Pender's HPM is based on cognitive theory, "cognition, affect, actions, and environmental events are proposed as operative interactively in determining behavior" (Pender, 1987, p. 57). Two sources of motivation that play a crucial role in a person's behavior are

the actualizing and stabilizing tendencies that are directed toward promoting change, growth, and maturation and toward protecting the system through maintaining balance and equilibrium of the internal and external environments. (Fleetwood & Packa, 1991, p. 69)

A health promoting lifestyle is described as a "multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of well-being, self-actualization, and fulfillment of the individual" (Pender, 1987, p. 77). This nursing model emphasizes the influence of cognitive and perceptual factors on an individual's health promotion behavior. Ultimately, Pender's 1987 model supports perceived control of health and client demographics as determinants in health promotion behavior.

Health promotion activities have been researched utilizing Walker, Sechrist, and Pender's Health Promotion Lifestyle Profile (HPLP) and the revised Health Promotion Lifestyle Profile II (HPLPII). The HPLPII instrument recognizes the frequency of self-reported health promoting behaviors associated with spiritual growth, health responsibility, physical activity, nutrition, interpersonal relations, and stress management (Walker et al., 1996). These six categories of behaviors are identified as subscales. The HPLP instrument has been utilized extensively within nursing research to define varying degrees of health promotion activities. The HPLPII is currently being utilized by various nurse researchers (Walker, personal communication, April 14, 1997). However, published studies are not available at the present time.

Locus of Control

Locus of control, identified as perceived control of health in Pender's HPM, was built upon Rotter's (1982) Social Learning Theory. The Social Learning Theory was developed to predict and change the behavior of individuals more efficiently. As a result, "multidimensionality of the locus of control concept has been operationalized in relation to health" (Palank, 1991, p. 815).

The theory utilizes an expectancy construct and the empirical law of effect. That is,

social learning as influenced by Rotter's control theory, is comprised of beliefs or expectancies that specific behaviors represent the cause and valued reinforcement, the effect. (Bowsher & Keep, 1995, p. 32)

Hence, expectations are established by doing, rather than learning. Furthermore,

expectancy (an individual's perception that a particular reinforcement will occur as a function of a specific behavior in a specific situation) is projected to influence one's behavior potential (the probability of certain behavior occurring), when considered in conjunction with the value of the behavior to the individual (its reinforcement) and the individual's psychosocial situation, that is, the environment or experiences of a person. (Bandura, 1977, p. 134)

The more value the reinforcement has to the person, the more important it will be for the individual to perform the activity. A belief, attitude, or expectancy regarding the nature of the relationship between the individual's behavior and its consequences may affect diverse behavioral selections in a multitude of situations (Rotter, 1982).

Therefore, an event regarded by some individuals as a reinforcement may be perceived differently and acted upon differently by another. A determinant of this reaction can be the degree to which the individual perceives that the reward follows from his own behavior versus the extent to which he feels the reward is controlled by forces outside of himself and may occur independently of his behavior (Rotter, 1982). Ultimately, the person will or will not perceive a causal relationship between his own behavior and the reward. This was identified as locus of control by Rotter in 1966.

"Internal" versus "external" locus of control is further defined to explain human behavior. Locus of control is viewed as a continuum with internal health locus of control (IHLC) on one end and external health locus of control (EHLIC) on the other end. Internality is seen as the extent individuals believe in their own ability to increase their degree of health or illness. Externality is seen as the belief that one's health is determined by powerful other people (doctors, nurses, family, friend) or is determined by fate, luck, or chance. Hence, individuals who expect their behavior will determine outcomes are defined as having a belief in internal control, while those who expect outside forces to have greater influence have a belief in external control (Bowsher & Keep, 1995).

The belief in internal or external control is thought to be a relatively constant personality characteristic (Oberle, 1991). Within Pender's HPM, perceived control of health (locus of control) directly affects health promotion activities. In this research study, locus of control and perceived control of health will be used interchangeably.

Many healthcare researchers have utilized the locus of control construct as the foundation for their research. Duffy (1989) utilized Pender's model to investigate the effects of health locus of control, self-esteem, and explicit health promotion activities in 420 employed women. Thirty-three percent of the variance of overall health status was explained by diagnosed health problem, income, internal locus of control, self-actualization, chance health locus of control, health responsibility, and exercise (Duffy, 1989).

Duffy, Rossow, and Hernandez's 1996 study of 397 employed Mexican-American women revealed that age, education, self-efficacy, health locus of control (internal and powerful others), and current health status made statistically significant contributions to all health promotion lifestyle profile subscale scores. The grouping of internal locus of control, current health status, and self-efficacy with all subgroups supports Walker's 1987 conclusion that health is a multifaceted concept. Hence,

locus of control plays a significant role in the practice of health promotion activities.

Duffy (1988) reviewed health locus of control, self-esteem, and health status for their impact on health promoting lifestyle activities in 262 women between the ages of 35 and 65. Results indicate partial support for Pender's model which states that individual perceptions of health locus of control, self-esteem, and health status influence health promotion behavior. Additionally, Duffy (1993) sampled 477 persons 65 years and older to determine variables that influenced an individual's engagement in health promotion activities. Her results showed that "older persons with high self-esteem and internal locus of control practiced five of the six health promotion strategies" (Duffy, p. 23).

Muhlenkamp, Brown, and Sands (1985, p. 331) found that "a strong belief in chance was negatively associated with engaging in health promotion activities; a strong belief in powerful others was negatively associated also". They surveyed 175 subjects measuring health beliefs, health values, and health promotion activities. Sixteen percent of the variance in health promotion was determined by a combination of beliefs, values, and demographic factors.

Pender, Walker, Sechrist, and Frank-Stromborg (1990) sampled 589 employees in health promotion programs. Thirty-

one percent of the variance in health promotion behavior was attributed to perceived personal competence, perceived health status, definition of health, and perceived control of health. The sampled employees perceived their health to be affected by significant others (external) but not by chance or in their control (internal).

Sixty-three healthy, middle class adults were surveyed by Brown, Muhlenkamp, Fox, and Osborn (1983). They determined no relationship between internal health locus of control and high health value, and health-related information-seeking behavior. They explain this behavior by identifying a person's intention to engage in health promotion behavior may not equal their actions.

Gillis and Perry (1991) conducted a longitudinal study of middle-aged women ($N=126$) in a rural community. They determined that physical activity did not have a significant impact on the participant's self-esteem, health status, or locus of control. The researchers contended these results may be due to the Hawthorne effect. The women, aware that they were involved in an experimental study, may have changed their behavior. This behavior may have impacted the results of the study.

Weitzel and Waller (1990) surveyed 173 skilled, semiskilled, and unskilled volunteers. Identifying cognitive-perceptual factors and demographics, they

determined that Caucasians had greater internal health locus of control than African-Americans and African-Americans perceived themselves to have greater chance locus of control than Caucasians. Additionally Mexican-American women had greater powerful others health locus of control and chance health locus of control scores than Caucasians or African-American female subjects. Overall, Caucasians practiced more health promoting activities.

One hundred and thirty healthy adults (ages 19-72) in a primary care clinic were examined by Frauman and Nettles-Carlson (1991). A higher chance locus of control was related with lower HPLP scores. Eighty percent of the participants had greater internal health locus of control, therefore Pender's relationship was supported in this study.

Laffrey and Isenberg (1983) determined a lack of a relationship between internal locus of control and physical activity. They sampled 70 women between the ages of 24 and 65 and determined that a "social desirability factor" may contribute to the participation in exercise. Hence, internals and externals may participate in health promotion behaviors for various reasons not studied in the project.

Fleetwood and Packa (1991) studied the correlation among adults' ($n=520$) practice of health promotion activities, health locus of control, value of health, and knowledge of coronary artery disease risk factors. Findings

supported Pender's view that control over health, health value, and knowledge about coronary artery disease risk factors are related to their participation in health promotion behaviors.

Overall, the locus of control construct has been utilized with mixed results involving internality versus externality and health promotion activities. The need for further research is therefore indicated.

Demographic Characteristics

According to Pender (1982, 1987, 1996), demographic characteristics play an integral role in behavior by influencing an individual's perceptions. Described as a modifying factor, demographics (personal characteristics) affect perceptions, thereby enabling or constraining the practice of healthy living. However, there have been inconsistent findings in the literature related to the impact of personal characteristics.

Age

Duffy's (1988) investigation of 262 women between 35 and 65 years of age, determined that self-actualization, interpersonal support, nutrition, exercise, and health belief were consistent with Pender's HPM. However, demographic variables did not have an impact on health

promoting behaviors. Duffy contends that this result was due to the homogeneity of the sample and hence, encouraged further nursing research.

Duffy (1993) used Pender's model to examine the effects of age on health related behaviors. Specifically, Duffy sought to explain the health care practices of a sample of 477 older persons. It was found that older persons with high self-esteem and internal locus of control practiced five of the six proposed health promotion strategies. Men with higher income and higher self-esteem but poorer health status, exercised less often or ate inappropriately. Older married persons who were internally controlled with a higher income were more likely to engage in exercise, health responsibility, and stress management but not interpersonal support. These findings support Pender's proposed relationship of age and health promotion activities as well as supporting relationships with other proposed demographic and sociocultural factors.

Gillis (1994) surveyed 184 adolescent females and their parents' health promoting behavior. Results speculate that parents' health promoting lifestyles are directly correlated with their daughters' health-promoting lifestyles. The young females were influenced by their parents behavior.

Volden, Langemo, Adamson, & Oechsle (1990) postulated that there was a relationship between age, gender, and

exercise practices to measures of health, lifestyle, and self-esteem. Significant correlations were found between the variables. These findings also support the influence of age on health promotion activities.

Pender, Walker, Sechrist, and Frank-Stromborg surveyed 589 employees participating in a health promotion program (1990). They determined that "gender, age, and phase of exercise program made a modest contribution to the explanation of health promotion lifestyles after consideration of the cognitive/perceptual processes" (Pender et al., p. 326). Results indicated female and older participants had healthier lifestyle patterns in their survey. These findings coincide with other studies indicating desirable health behaviors occurring with women and older adults (Pender et al.).

Four hundred and fifty-two adults, aged 18 to 88, were studied to determine health promoting lifestyles in the young, middle-aged, and older adults. Walker, Volkan, Sechrist, and Pender (1988, p. 76) identified "older adults had higher scores in overall health promoting lifestyle and in the dimensions of health responsibility, nutrition, and stress management than both young and middle-aged adults" (Walker et al., p.76).

Lusk, Kerr, and Ronis (1995, p. 22) determined "younger workers had higher scores on self-actualization, exercise

and interpersonal support. Older workers had higher scores on health responsibility and nutrition".

Additionally, Fleetwood, and Packa (1991) reported demographic variables had no impact on health promotion activities. They determined there was not a statistical difference in HPLP scores regarding age, marital status, race, and education. However, the researchers concluded these results may be due to the homogeneity of the subjects. The subjects were mostly Caucasian, well-educated, healthy, full-time, health care recipients, and were encouraged to partake in health promotion activities. However, this study supported Pender's view on cognitive-perceptual variables influence on health promotion behavior.

Gender

Self-rated health status, self-efficacy, motivation, and selected demographic characteristics were analyzed by Fehir (1988). Socioeconomic status found to be unrelated to health promotion. Marriage and motivation were found to be directly related to health promotion activities. Overall, results demonstrated that men with moderate to high perceived health status, self-efficacy, and motivation acknowledged spousal contributions as a precursor to health responsibility.

Weitzel (1989) determined gender significantly predicted the interpersonal support dimension of the HPLP, with women consistently scoring higher than men. Gottlieb and Green (1987, p. 43) determined "younger age is most strongly related to physical activity, followed by good health status, high educational level, high income, large social network and male gender."

Duffy (1993) reported that older healthy persons with high self-esteem and internal locus of control reported practicing five of the six health promotion strategies of 477 persons. Additionally, these findings reflect that older mid-life women who had internal control were more likely to practice greater health responsibility and stress management activities than younger women.

As depicted in other studies, Walker, Volkan, Sechrist, and Pender (1988) determined gender contributed to a significant variance in overall health promotion behavior and on health responsibility, exercise, nutrition, and interpersonal support. In their study of 452 adults aged 18 to 88, they determined that women scored significantly higher than men in all dimensions.

Personal interviews of 167 undergraduate college students by Lonquist, Weiss, and Larsen (1992) determined female students averaged more health promotion activities than did male students. Additionally, peer practices

influenced health promotion behavior in both males and females.

Marital Status

Walker, Volkan, Sechrist, and Pender (1988) determined marital status and employment status explained the variance within the nutrition dimension of the HPLP. Kahn, Williamson, and Stevens (1991) examined weight changes in 514 African-American and 2770 Caucasian women over a 10 year time period. Results showed the mean weight was greater for African-American than Caucasian women, therefore indication reduced likelihood of significant weight loss, but not with major weight gain. Furthermore, "women at greatest risk of weight gain are those with education below college level, those entering marriage, and those with low family income" (Kahn, et al., p. 319).

Johnson, Ratner, Bottorff, and Hayduk (1993) examined Pender's HPM. They explored demographic features and their affects on cognitive-perceptual variables in 3,025 noninstitutionalized adults. Sex and marital status showed no significant impact on three cognitive-perceptual factors.

Six hundred and fifty-nine women were surveyed regarding health promotion and health damaging behaviors (Woods, Lentz, & Mitchell, 1993). They determined women who had increased stressors, were less educated, were not

partnered, or experienced depression engaged in health damaging behavior. Meanwhile, women with decreased life stressors and more education exercise more health promotion activities.

Gottlieb and Green (1987) studied ethnicity and lifestyle health risks in 3,025 adults aged 20 to 64. They reported an overall healthier lifestyle was practiced by married men and women than by unmarried members of both sexes.

Ethnicity

Ahijevych and Bernhard (1994) researched health promoting lifestyle behaviors among 187 African-American women and contrasted findings to other reports utilizing the HPLP tool. Interpersonal support and self-actualization were the highest ratings within this group. Exercise activity was the lowest rated subscale, which is consistent with previous studies which claim that African-American women are less likely to exercise, not smoke, and maintain favorable weight standards. However, the exercise scores were generally lower than scores from other groups. The results support Pender's HPM and the belief that certain personal characteristics influence the likelihood that health promotion behaviors will be present. However, it was

noted that the HPLP may have a middle-class bias, therefore, results may be limited.

Duffy, Rossow, and Hernandez (1996) investigated the health promoting behaviors of 397 employed Mexican-American women and compared this sample to other reports using the HPLP. The results indicated that Mexican-American women had the highest HPLP scores of all minority groups, but lower than Caucasian groups. In addition to ethnicity, age, education, health locus of control (internal and powerful others), self-efficacy, and current health status were all significantly important variables to the HPLP scores.

Kerr and Ritchey (1990) studied the health promoting lifestyles of 62 English-speaking and Spanish-speaking Mexican-American migrant farm workers. They determined English-speaking workers scored lower than Spanish-speaking workers on the dimensions of self-actualization, exercise, and stress management. Overall, "both groups scored highest in self-actualization and interpersonal support and lowest in health responsibility and exercise" (Kerr et al., p. 80).

Determinants of health promotion activities in Caucasian, Hispanic, and African-American blue collar workers were reviewed by Weitzel and Waller (1990). One hundred and seventy-three skilled, semiskilled, and unskilled volunteers determined Caucasians reported greater self-actualization than Hispanics. However, no differences

between Caucasians and African-Americans and between Hispanics and African-Americans were found. Good nutritional practices were reported by Caucasians, although no difference was determined between Hispanics and African-Americans. Household income was a precursor to Hispanics' health promotion behavior. Overall, the researchers reported health promotion activities of Caucasians and Hispanics are better than African-Americans.

Two hundred and forty-three low income African-American and Latino women were studied regarding health promotion behavior in California by Sanders-Phillips (1994). Sixty-one percent of the Latinos were born in Mexico or El Salvador. The results showed Latino women were more likely to eat breakfast, sleep seven to eight hours a night, and abstain from alcohol and tobacco use than African-American. African-American women ate more vegetables and exercised at least once a week. This study revealed ethnicity to be a determinant of health promotion activities.

Gottlieb and Green (1987) determined ethnicity was related to physical activity, smoking, and relative body weight in 3,025 adults. The best relative weights, the least smoking, and the greatest physical activity levels were recorded by Caucasians. They determined African-Americans to have the poorest levels on all three measurements.

Income

Muhlenkamp, Brown, and Sands (1985) sampled 175 subjects in a nursing clinic. Results indicated that being married or widowed, increased age, of a Protestant religion, higher educated, and higher income were related to practicing more health promotion behaviors.

A correlational study of 420 employed women determined those who considered themselves in good health, are described with "no diagnosed health problems, good household incomes, high locus of control, low chance locus of control, increased self-actualization, increased exercise, and decreased health responsibility health promotion scores" (Duffy, 1989, p. 54). Hence, subjects with good income and no health problems are more likely to feel in control of health and not believe in chance.

Slater, Lorimor, and Lairson (1985) investigated the relationship between socio-economic status and health status and their impact on an individual's health practices. They determined "perceived health status was associated with socio-economic status, whether the indicator was educational level, family income, or occupation, and to number of positive health practices" (Slater, et al., p. 372).

Children Living in the Home

Upon review of the literature, this researcher could not find studies that indicated that parental responsibilities influenced personal health promotion behavior. However, anecdotal evidence suggested childrearing responsibilities significantly impact health promotion activities (G.A. Grabowski, personal communication, December 10, 1996; P.J. Douglas, personal communication, March 15, 1997).

Educational Level

Gottlieb and Green (1987, p. 38) found that in both genders, "education, age, and income determined health practices directly as well as indirectly through negative life events and social network". Education was consistently correlated to positive health promotion activities in African-Americans, Hispanics, and Caucasian ethnic groups of both sexes. They discovered education to be a highly predictive variable to healthy living in relation to income level (Gottlieb & Green. 1987).

Frauman and Nettles-Carlson (1991) determined that race, age, gender, and rural versus urban residence were not related with total scores on the HPLP (N=130). Yet, a higher income and educational level did make a significant difference in health promotion activities. Those with a

college degree or higher and with an annual income of \$30,000 or more were reported as having a healthier lifestyle.

Alexy (1991) studied participation ($n=101$) versus non-participation ($n=100$) at wellness centers. Demographic determinants of participation were to be younger and of increased education. Twenty-one of the wellness center participants (21%) were college educated and two of the non-participants (2%) were college graduates. This exhibits a correlation between higher education and health promotion activities.

When comparing health promotion lifestyles of 452 subjects throughout the lifespan (ages 18 to 88), researchers determined education and income explained the variance in the self-actualization dimension and in the overall health promotion activities (Walker, Volkan, Sechrist, & Pender, 1988). A participant's higher education was also associated with nutrition, interpersonal support, and stress management.

Military Rank

Within the military system, rank influences socioeconomic status, educational level, and annual household income. However, empirical research was not found

indicating the impact of military rank on health promotion behaviors.

Occupation

Six hundred and thirty-eight blue-collar, skilled trade, and white-collar workers were examined by Lusk, Kerr, and Ronis (1995). They investigated health promotion practices related to ethnic origin, age, gender, education, marital status, and job classification. Results showed that women scored higher on total health promoting lifestyle, greater educational background indicated greater HPLP scores, and marital status scores were inconclusive. Additionally, white-collar workers scored higher than blue or skilled trade workers on self-actualization, exercise, and interpersonal support subscales, and blue-collar workers scored significantly lower on nutrition and overall health promotion lifestyles.

Hours Worked Per Week

Alexy (1991) revealed nonparticipation in workplace wellness centers was determined by barriers such as, working overtime, responsibilities at home, shift work, and distance from work. In addition, Alexy (p. 33) states, blue-collar workers are "more likely to be on shift work, change shifts frequently, and may find it necessary to be employed at two

jobs." This would prevent the employee to participant in wellness center activities due to increased hours at work.

Gillis and Perry (1990) studied mid-life women's health promotion behavior ($N=126$). "Lack of available time" (Gillis et al, p. 307) was identified as a barrier to participation in a regular exercise routine.

Furthermore, anecdotal evidence suggested increased hours spent at work significantly impact the likelihood of performing health promotion activities. Men and women identified increased hours at work as a deterrent in conducting health promotion activities (M.C. Wahl, personal communication, March 10, 1997; B.J. Bieber, personal communication, November, 14, 1996).

Summary of Demographic Characteristics

Personal characteristics have shown to affect health promotion activities. Socioeconomic variables (income, education), gender, and age have been consistently related to health promotion activities. Cultural patterns are suggested, but the results of the research are mixed. Marital status, children living in the home (parental responsibilities), military rank, occupation, and hours worked per week have not been fully explored within the nursing, medical, and social sciences in regards to health

promotion activities. Therefore, further research is warranted in the study of health promotion.

Military Health Promotion

Limited studies have been accomplished within the military system regarding personal and community health promotion activities. The military (Air Force, Navy, Marines, and Army) are unique subcultures that warrant further investigation regarding health promotion practices. As previously described, health promotion activities lead to a state of well-being and self-actualization. This ideal health state maintains military readiness and ultimately decreases health care costs.

This study did not critically examine drugs, smoking, and alcohol's relationship with health promotion behavior. However, within the military, these variables have been studied as disease prevention factors that can ultimately, impact a health promotion lifestyle.

Five hundred and two military officers were surveyed by Fleetwood and Packa (1991). Findings of their study support the usefulness of the Multidimensional Health Locus of Control (MHLC) scale in determining the participant's locus of control, and ultimately their participation in health promotion activities. They determined that participants who scored high on the HPLP also scored high on the internal

health locus of control scale and placed a higher rating on health value. Additionally, the subject with increased health locus of control scored higher on coronary artery knowledge. Therefore, the researchers considered them more knowledgeable.

The Army's Health Risk Appraisal and Promotion seminar was tested to analyze its significance in health care. The results of the intervention indicated limited but significant changes in Army personnel's behavior. The study results also suggested that self-efficacy scores are predictive of specific behaviors (Barfield, 1992).

Alcohol consumption and tobacco use are also a health-related concern within the military. Henley (1991) suggested that level of alcohol consumption was inversely related to biological age; contextual beliefs affected the degree of alcohol consumption; positive relationships were found for the sociodemographic factors of ethnicity, military rank, marital status, and degree of alcohol consumption; and although type of occupation (in relation to gender) did not relate to alcohol consumption, the risk of consuming more alcohol was increased among those servicewomen who are in predominately male occupations. Other studies have found a greater rate of smoking and alcohol use among active duty personnel compared to their civilian counterparts (Johnson et al., 1993).

Bray, Marsden, & Peterson (1991) concluded military personnel ($N=8,084$) were less likely to consume drugs, but were more prone to use alcohol and cigarettes than their civilian counterparts ($N=4,894$). In addition, military men were more likely to drink heavily.

Johnson et al. (1993, p. 321) researched 181 military personnel and their families and determined that alcohol users "were younger, less educated, unmarried, and junior and mid-career enlisted personnel". Cigarette use was higher among Caucasian men with less than a high school education, and senior enlisted personnel.

Military personnel have weight standards to maintain in order to maintain maximum wartime readiness. Hudak (1988) investigated overweight and normal weight Army personnel to determine health beliefs and health promotion activities. The findings indicated that there were no significant differences between the groups in their value of health or health conception. Perceived health status and a history of childhood obesity discriminated the most between the two weight groups.

Wright, Knapik, Bielenda, & Zoltick (1994) investigated physical fitness and cardiovascular risk factors in male senior military officers. Overall, findings reflected an apparently healthy diet and lifestyle. Lower total cholesterol and smoking rates were illustrated in comparison

to the average civilian 45 years old. Additionally, it was reported that military officers have a high aerobic capacity, are normotensive, non-obese, and at low risk for development of cardiovascular disease.

Haddock, Poston, Talcott, Atkins, & Masciotra (1995) examined cigarette and alcohol use in a large group of military retirees ($N=1,359$) and dependents ($N=983$). Contrary to the active duty population, it was determined that the retiree population exercised similar alcohol and smoking rates as the general senior population. Additionally, many of the retirees characterized themselves as "ex-smokers", therefore leading a more healthy lifestyle.

Jonas (1994) investigated soldiers ($N=1,299$) 17 to 58 years of age with the average being 30 years old. Soldiers identified the most important health goals which were; self-esteem and the ability to relax, family relationships and work situations, increase exercise, improve diet, and spiritual relationships. The most detrimental health habits among the soldier was smoking, followed by deficiency of regular physical exercise, high fat diet, and being overweight. Additionally, this survey exhibited marked differences in health promotion needs and personal health goals of military personnel.

The literature cites studies regarding disease prevention issues (smoking, drinking, drug usage). However,

scant research is available regarding health promotion practices of military personnel.

Summary

This chapter addressed the pertinent literature regarding health promotion, health promotion models, locus of control, and demographic and military research related to health promotion activities.

Based on the HBM, Pender described a health promotion lifestyle as a "multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of well-being, self-actualization, and fulfillment of the individual" (Pender, 1987, p. 77). As reviewed, numerous agencies, researchers, and government publications illustrate the impact health promotion activities have on individuals and the healthcare system.

Locus of control, built upon Rotter's Social Learning Theory (1982), has been studied extensively in nursing and psychology research. The concept regarding internally versus externally controlled has been tested with mixed results. The need for further research is warranted.

The literature revealed that personal attributes affect the occurrence of health promotion behaviors. Income, education, gender, and age were continually associated with health promotion activities. Cultural patterns were

suggested, but the reports of the research were mixed. Marital status, children living in the home (parental responsibilities), military rank, occupation, and hours worked per week have not been adequately researched in regards to health promotion behavior.

There was a dearth amount of nursing and medical literature regarding determinants of health promotion practices in the military setting. The military system is a unique subculture and warrants more extensive research regarding health care practices and related psychological variables as identified by Pender.

Overall, locus of control, personal characteristics, and the military population have been researched inadequately or with mixed results in relation to health promotion behaviors. The literature supported further investigation regarding these factors.

CHAPTER 3

FRAME OF REFERENCE

Introduction

Health promotion is a rapidly expanding component of civilian and military healthcare systems. This chapter will illustrate Pender's Health Promotion Model (HPM), in relation to the study's variables. The HPM will guide the researcher to draw conclusions of predictive relationships regarding locus of control, demographic variables, and health promotion behaviors in Air Force (AF) personnel.

Conceptual Framework

A Review of Pender's Models

Pender's 1982 HPM had been revised to reflect research findings from studies on health promotion activities. Empirical research proved to negate the influence of desire for competence, self-awareness, self-esteem and to strengthen the correlation of perceived self-efficacy, biologic characteristics, and behavioral factors in adhering to health promotion behaviors. Hence, Pender developed her

1987 model identifying relationships between cognitive-perceptual factors and modifying factors and their influence on health promoting behavior.

Furthermore, Pender's 1996 model demonstrates the related empirical research. Three new variables are included in the model, including; activity-related affect, commitment to a plan of action, and immediate competing demands and preferences. Four variables have been omitted from the model, including; importance of health, perceived control of health, definition of health, and perceived health status. The researcher chose to utilize Pender's 1987 model due to mixed results in the literature regarding the effects locus of control has on health promotion activities.

Pender's HPM focuses on movement toward high-level wellness and actualization. The model is used as a "framework for integrating nursing and behavioral science perspectives on factors influencing health behaviors" (Pender, 1996, p 51). Pender (1987, 1996) contends that health promoting behaviors are an expression of the individual's actualizing tendencies and not only a reaction to the threat of illness. Pender asserts health promoting behaviors can be a positive expression of increased self-awareness, self-satisfaction, enjoyment, and pleasure. These behaviors focus on maintaining or improving a person's sense of well-being and health status in the absence of a

specific threat to their health state. Pender (1987) postulates that health promotion behavior, perceived control of health, demographic characteristics, and health status are related to each other. The model

(1) introduces order among concepts that may explain the occurrence of health promoting behavior, (2) provides for the generation of hypotheses to be tested empirically, and (3) integrates disconnected research findings into a coherent pattern. (Pender, 1987, p. 57)

The HPM portrays a multidimensional person who is interactive with the environment as health and wholeness are pursued. The HPM is proposed as an explanation of why individuals engage in healthy behavior. Holistic human functioning is the major construct (Pender, 1987).

Health Promotion Model's Assumptions

The HPM includes seven assumptions that reflect behavioral and nursing science outlooks:

1. Persons seek to create conditions of living through which they can express their unique human health potential.
2. Persons have the capacity for reflective self-awareness, including assessment of their own competencies.

3. Persons value growth in directions viewed as positive and attempt to achieve a personally acceptable balance between change and stability.
4. Individuals seek to actively regulate their own behavior.
5. Individuals in all their biopsychosocial complexity interact with the environment, progressively transforming the environment and being transformed over time.
6. Health professionals constitute a part of the interpersonal environment, which exerts influence on persons throughout their life span.
7. Self-initiated reconfiguration of person-environment interactive patterns is essential to behavior change. (Pender, 1996, p. 54)

These assumptions accentuate the active role of the patient in developing and adhering to health behaviors and in changing their environment.

Decision Making Phase and Action Phase

Pender's HPM (1987) includes two phases of client involvement: the decision making phase and the action phase. Specific strategies included in Pender's decision making phase include; health assessment, values clarification, promoting competence for self-care, and the

development of a health protection/promotion plan. This stage promotes informed decision making by the patient about health activities (Pender, 1987). Pender's second stage, the action stage, cites specific actions that the patient can select to preserve and strengthen personal health status. This stage includes modification of life style, exercise and physical fitness, nutrition and weight control, stress management, and social support and health.

The decision making phase consists of individual perceptions and modifying factors. Individual perceptions include the importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health status, perceived benefits of health-promoting behaviors and perceived barriers to health-promoting behaviors. Modifying factors include demographic, biologic, interpersonal, situational, and behavioral variables that affect people's dispositions regarding health promoting behavior.

The second phase, or the taking action phase, includes both barriers and cues to action that influence activity. Cues to action are "the likelihood of taking health promoting action dependent on activating cues either of internal origin or emanating from the environment" (Pender, 1987, p. 68). Feelings of well-being, conversations with others pertaining to their exercise and nutrition routine,

stress management or interpersonal relationships may be cues to action. Additionally, the media portrays programs on health, lifestyle, and diseases. "The intensity of the cues needed to trigger action will depend on the level of readiness of the individual or group to engage in health promoting activity (Pender, 1987, p. 69). There is fluid movement between the two phases. Figure 1 is a graphic representation of Pender's 1987 model.

Pender contends that health promoting behaviors are related to cognitive-perceptual and modifying factors. Cognitive-perceptual factors are the primary mechanisms for acquisition and maintenance of health promoting behaviors. Pender states that each factor is proposed as exerting a direct influence on the likelihood of engaging in health promoting behavior (Pender, 1987). Factors identified within the model are: (a) importance of health, (b) perceived control of health, (c) perceived self-efficacy, (d) definition of health, (e) perceived health status, (f) perceived benefits of health promoting behaviors, and (g) perceived barriers to health promoting behaviors.

This study will explore one cognitive-perceptual variable, locus of control, as defined in Pender's HPM.

Pender's Health Promotion Model (1987)

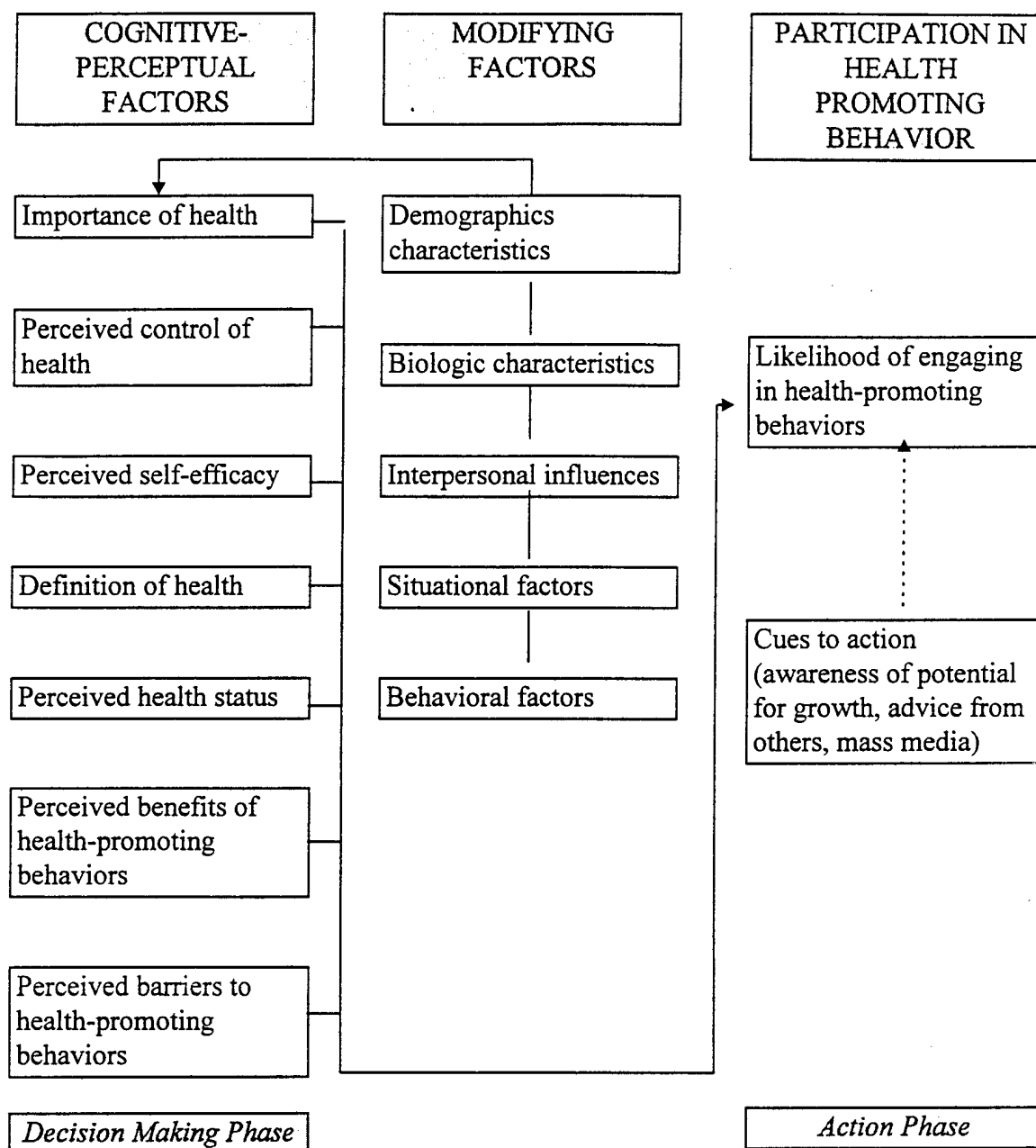


Figure 1. Pender's Health Promotion Model (From Pender, N. (1987). *Health Promotion in Nursing Practice*. Norwalk, Connecticut: Appleton-Lange, 58. Reprinted with permission - Appendix A)

Locus of control (internality vs. externality) will be investigated as to its impact on health promotion behaviors. The researcher recognizes other predictors and behaviors that preclude health promotion activities, however, locus of control will be thoroughly explored within this study to determine its impact.

Modifying factors, described by Pender (1987) are demographic characteristics, biologic characteristics, interpersonal influences, situational factors, and behavioral factors. These factors only indirectly affect action tendencies through their relationship with cognitive-perceptual variables. In addition to locus of control, this study will evaluate demographic characteristics and their predictive relationship with health promotion behavior. In particular, this study will examine the modifying factors of age, gender, marital status, ethnicity, income, children living in the home, education, military rank, occupation, and hours worked per week. Pender states

Sex is the demographic variable most predictive of preventive behaviors, and women exhibit a predisposition to engage in those behaviors more frequently than men. Education as a determining factor is supported by some studies in which the level of formal education correlated positively with the frequency of preventive actions. Race and ethnicity

appear to be factors in use of preventive services only when they are associated with socioeconomic level.

Socioeconomic status appears to exert an effect only when significant cost or time is required to carry out preventive actions. (Pender, 1987, p. 48)

Many researchers have completed nursing research on health promotion behavior utilizing Pender's model, however, the AF community has not been included. This knowledge gap needs to be filled as the information is vital for military health care professionals to direct their care. This researcher contends that Pender's 1987 model will be supported in this study.

Research Question

The research question for this study was: Is there a predictive relationship between perceived control of health, demographic characteristics (age, gender, marital status, ethnicity, household income, children living at home, education, military rank, occupation, and hours worked per week) and health promotion behaviors in active duty Air Force (AF) personnel?

Hypotheses

Two hypotheses were proposed for this study.

1. Locus of control (perceived control of health) predicts health promotion behavior in active duty AF personnel.

2. Demographic characteristics (age, gender, marital status, ethnicity, income, children living in the home, education, military rank, occupation, and hours worked per week) predict health promotion behavior in active duty AF personnel.

Definition of Terms

The terms were defined in theoretical and operational contexts. The terms defined are; locus of control, demographic characteristics, active duty AF personnel, and health promotion behaviors.

Locus of Control

The theoretical definition of locus of control is "the belief that health is self-determined, is influenced by powerful others, and/or is the result of chance or fate" (Wallston, Wallston, Kaplan, and Maides, 1976, p. 71). Locus of control is derived from Rotter's (1982) Social Learning Theory. According to Rotter, individuals develop general expectancies about the effects of their behavior

from their social learning experiences (Oberle, 1991). Individuals identified by an internal locus of control expect that outcomes are within their control and are due to their actions. Individuals with an external locus of control believe personal outcomes are more often due to chance, fate, or powerful others and not in their control. This belief in internal or external control is thought to be a relatively stable personality characteristic (Wurtele, Britcher, & Saslawsky, 1985). Health locus of control was operationally defined as the score resulting from the Multidimensional Health Locus of Control (MHLIC) scale. This scale was used to measure a person's perceived locus of control in determining their state of health.

Demographic Characteristics

The theoretical definition includes characteristics of an individual and their lifestyle. The operational definitions included age in years, gender, annual household income, educational level, ethnicity, marital status, occupation, children living in the home, military rank, and hours worked per week. These variables were included in the Biographical Data Sheet.

Active Duty AF Personnel

The theoretical definition includes any individual that permanently represents the AF. All ranks are included.

Health Promotion Behaviors

The theoretical definition is "a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization, and fulfillment of the individual" (Walker, Sechrist & Pender, 1987, p. 76). These behaviors include activities directed toward increasing health and well-being and realizing the health potential of individuals, families, communities, and society. The operational definition was based on the results of the Health Promoting Lifestyle Profile II (HPLPII). This instrument recognizes the frequency of self-reported health promoting behaviors associated with physical activity, health responsibility, nutrition, interpersonal relations, spiritual growth, and stress management (Walker et al., 1987). Each of the preceding six sections of health behaviors exists as a subscale measurement. The overall health promotion index will be utilized for hypotheses testing.

Assumptions

Basic assumptions of the study included:

1. All individuals strive for health and well-being.

2. Individuals are the most reliable and important source of their health-related behavior.
3. Participants will answer the survey honestly, completely, and accurately.
4. AF personnel are free to choose from numerous opportunities to perform health promoting behaviors.
5. The AF is selective in their recruitment of active duty personnel. A complete physical is performed prior to their approval of enlistment or commission.
6. The selected instruments will measure what they are intended to measure.
7. Individuals behave on the basis of cognitive information.
8. External and internal factors exert influence on an individual's behavior.

Summary

This chapter described Pender's HPM as the conceptual framework for this research study. The HPM defined the specific variables included in the study and provided the framework for the research question and hypotheses.

Additionally, health promoting behavior has been reinforced as an activity that maintains a state of readiness within the military system. Health is a significant factor in retaining an individual to retirement.

Health promotion measures are more cost-effective in improving the health of a population than is aggressive costly medical treatment. An improvement in health promoting practices can reduce illnesses and increase overall quality of life.

If active duty AF personnel believe they are in control of their health status, it is reasonable to predict that they will participate in health promoting behaviors. Demographic factors may also play a role in determining the practice of health promoting behavior in active duty military personnel.

In summary, the purpose of this study was to examine the extent locus of control and demographic characteristics can predict health promoting behaviors in active duty AF personnel. By determining the predictive relationship, the hypotheses were tested.

CHAPTER 4

METHODS AND PROCEDURES

Introduction

The purpose of this research study was to determine the extent perceived control of health (locus of control) and demographic characteristics (age, gender, marital status, ethnicity, income, children living in the home, education, military rank, occupation, and hours worked per week) can predict health promotion behavior in active duty Air Force (AF) personnel.

This chapter describes the methodological components of the study including the research design, sample, setting, population, measurement methods, procedure, ethical considerations for human subject protection, data analysis, and communication of findings.

Research Design

This study was a predictive, correlational, non-experimental investigation. "Using this design will

facilitate the identification of many interrelationships in a situation in a short period of time" (Burns & Grove, 1993, p. 302). In this study, determination of the relationship between perceived control of health and demographic characteristics with health promotion behavior was investigated.

Prior to hypotheses testing, a descriptive design described the sample and its components. Descriptive research provides an accurate description of the characteristics of the group and provides a comprehensive knowledge base regarding the variables being researched (Burns & Grove, 1993).

A predictive design was used to predict health promoting behavior based on the values obtained regarding perceived locus of control and demographic features of AF personnel. No treatment was administered to the subjects.

Sample

The target population consisted of active duty AF personnel assigned to one AF base. A sampling frame was acquired from base personnel services and included all members of the population.

Sample size was determined by Cohen's analysis utilizing a 1.0 power level, .05 alpha, and small effect size for each hypothesis in the study. An alpha level of

.05 was used for all statistical tests. The components of a power analysis are related to the level of significance and the statistical tests to be used (Burns & Grove, 1993). A computer program, located at University of Nevada, Las Vegas' Department of Nursing, was utilized to determine the sample size. It was expected that approximately 20 percent of the randomly selected individuals would consent to participate in the study and be available. Therefore, the researcher sampled 600 personnel to provide assurance of adequate sample size to maintain power level. According to the base Readiness Office, the active duty population of the selected base was 6,520 in November, 1996 (Appendix B).

The sampling plan of the researcher included simple random sampling ($N=600$) "to ensure some degree of precision in accurately estimating the population parameters" (Burns & Groves, 1993, p. 239). Every member of the population had equal opportunity to be selected for the sample. The sample was selected randomly from the list (supplied by base personnel office) of all active duty personnel assigned to the selected AF base. After taking the base active duty population (6,520) and dividing it by 600, every ninth or tenth person on the alphabetized registrar was selected.

Setting

The setting for the study was an AF base located in the southwest. It is an Air Combat Command base and its mission includes flight testing, training, and essential support groups. Overall, the personnel assigned to the base are similar to other AF bases. Support groups serve Department of Defense beneficiaries as determined by federal law. All active duty members were equally accessible for random sampling.

Following approval and support of the base commander (Appendix C), the base newspaper was notified regarding the survey to promote participation (Appendix D). An article, describing the survey, was placed in two editions of the paper prior to survey distribution.

Measurement Methods

Multidimensional Health Locus of Control Scale

Wallston, Wallston, Kaplan, & Maides (1976) developed and validated the Health Locus of Control (HLC) scale. By determining a person's locus of control, Wallston hypothesized that the researcher could gain information on his or her need for exposure to more information (Frank-Stromborg, 1988).

Following revision of the HLC scale, the three Multidimensional Health Locus of Control (MHLC) scales were devised. This study will utilize Form A (Appendix E). This scale is an 18 item instrument developed to measure the extent to which subjects believe their health-related behaviors are internal (under their own control); a matter of chance (under the control of chance occurrences), or under the control of powerful others. In essence, the variable assessed was the kind and extent of control a person thinks he has over his own state of health. This tool was conceived from Rotter's Social Learning Theory (Wallston & Wallston, 1978).

A six point Likert-type scale was used for responses. The six response categories were: strongly disagree (1), moderately disagree (2) , slightly disagree (3), slightly agree (4), moderately agree (5), and strongly agree (6). The level of measurement was interval.

The MHLC was designed to yield three scores, indicating internality, chance externality, and powerful others externality. Each item was scored from 1 (strongly disagree) to 6 (strongly agree). The tally of each subscale was the sum of the values circled for each item on the subscale. Items 1, 6, 8, 12, 13, and 17 identify internality, with a possible range of scores between 6 and 36. Items 2, 4, 9, 11, 15, and 16 identify chance

externality, with a possible range of scores between 6 and 36. Items 3, 5, 7, 10, 14, and 18 identify powerful others externality, with a possible range of scores between 6 and 36. Items did not need to be reversed prior to summation (Wallston, 1996).

Wallston & Wallston (1996) concluded Cronbach's alpha coefficients for this tool were .77 for internal health locus of control, .69 for chance, and .73 for powerful others. Other researchers have utilized this instrument to verify Pender's model in relation to locus of control. Permission has been received from Dr. Wallston to use the MHLC instrument (Appendix F).

Health Promoting Lifestyle Profile II

The original Health Promoting Lifestyle Profile (HPLP) was developed by Walker, Sechrist, and Pender from the Lifestyle and Health Habits Assessment. It was originally a 100 item clinical nursing checklist of positive health behaviors (Pender, 1982). The Health Promoting Lifestyle Profile II (HPLPII) has been devised from the HPLP to measure an individual's current practice of behaviors that serve to maintain or increase levels of wellness, self-actualization, and fulfillment (Appendix G). It is a multidimensional tool that describes self-initiated actions (Walker, 1995). Its present form is a self-report 52 item,

4 point summated rating scale which contains six subscales: health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. Interval data was obtained from the HPLPII for hypotheses testing..

Desirable and undesirable behavior items were interspersed throughout the instrument in attempt to reduce response set (Walker, Sechrist, & Pender, 1987). All items are scored on a scale from 1 to 4. The four response categories were: never (1), sometimes (2), often (3), and routinely (4). A higher overall score indicated a more health promoting lifestyle with a possible point range of scores from 52-208. Six subscale scores were obtained by calculating a mean of the responses to subscale questions. The items included on each scale were as follows: overall health promoting lifestyle (1-52), health responsibility (3, 9, 15, 21, 27, 33, 39, 45, 51), physical activity (4, 10, 16, 22, 28, 34, 40, 46), nutrition (2, 8, 14, 20, 26, 32, 38, 44, 50), spiritual growth (6, 12, 18, 24, 30, 36, 42, 48, 52), interpersonal relations (1, 7, 13, 19, 25, 31, 37, 43, 49), and stress management (5, 11, 17, 23, 29, 35, 41, 47).

"The use of means rather than sums of scale items is recommended to retain the 1 to 4 metric of item responses and to allow meaningful comparisons of scores across subscales" (Walker, 1995, p. 3). Therefore, the mean scores

(subscales and overall) were divided by the number of items in that subscale (8 or 9) or entire survey (52).

Cronbach's alpha coefficients for the HPLPII's subscales are as follows: health responsibility (.861), physical activity (.850), nutrition (.800), spiritual growth (.864), interpersonal relations (.872), and stress management (.793). Total HPLPII Cronbach's alpha is .943 (Walker, 1995). The six subscales were identified following an axis factor analysis.

This researcher referenced the total HPLPII score in relation to the predictors; demographics and locus of control. Permission has been received from Dr. Walker to use the HPLPII (Appendix H).

Biographical Data Sheet

Demographic characteristics (modifying factors) were measured by an investigator-designed survey. It includes demographic data as defined by Pender (1982) and the researcher (Appendix I). The data sheet consists of 10 items.

The participant's age was stated in number of years in age. Interval data were collected on this item.

The participant's gender was surveyed as male or female. Nominal data were collected on this item.

The participant's marital status was identified as single (not living with partner), single (living with partner), married, separated, divorced, or widowed. Nominal data were collected on this item.

The participant's ethnicity was identified as Caucasian/White, African-American/Black, Hispanic, Asian, or other. If the participant's ethnicity was "other", the participant was asked to specify. Nominal data were collected on this item.

Annual total household income was identified as \$0-\$25,000, \$25,001-\$50,000, \$50,001-\$75,000, \$75,001-\$100,000, and \$100,001 or greater (+). Ordinal data were collected on this item.

Children living in the home was surveyed as a "yes" or "no" response. Nominal data were collected on this item.

Highest level of education completed was identified as specialty AF training, civilian technical degree, associate degree, four year degree, masters degree, or doctorate degree. The participant was asked to identify the highest level of education completed and to mark one answer. Ordinal data were collected on this item.

Military rank was surveyed according to military rating. Enlisted ranking was identified as: E-1 (Airman Basic), E-2 (Airman), E-3 (Airman First Class), E-4 (Senior Airman), E-5 (Staff Sergeant), E-6 (Technical Sergeant), E-7

(Master Sergeant), E-8 (Senior Master Sergeant), and E-9 (Chief). Officer ranking was identified as: O-1 (Second Lieutenant), O-2 (First Lieutenant), O-3 (Captain), O-4 (Major), O-5 (Lieutenant Colonel), O-6 (Colonel), O-7 (Brigadier General), O-8 (Major General), and O-9 (Lieutenant General). The greater ranking is noted by the higher number following the enlisted (E) or officer (O) designation. A General (O-10) is not assigned to the surveyed base. Ordinal data were collected on this item.

AF Specialty Code (AFSC) was surveyed to determine the occupation of the AF member. It is an alphanumeric code that designates the AF member's occupational specialty. Nominal data were collected on this item.

Average hours worked per week was identified as less than 40 hours, 40-50 hours, 51-60 hours, 61-70 hours, or 71-80 hours. Ordinal data were collected on this item.

Other predictors and health behaviors (smoking and drug-use history) influence a healthy lifestyle and are acknowledged. These variables have been tested extensively throughout the civilian and military population, therefore they were not included in this research study.

Procedure

Following approval from the University of Nevada, Las Vegas' (UNLV) Nursing Human Subjects Rights Committee

(Appendix J), UNLV' Human Subjects Institutional Review Board (Appendix K), and the base commander, the survey was distributed utilizing the AF base's distribution services. All surveys were disbursed by the distribution center located at the base post office. Distribution services forwarded the survey by referring to the participant's office symbol (duty section) addressed on the outside of the envelope.

Following completion of the survey, the participant was instructed to route the survey through distribution to the researcher. Included in the survey was a participant cover letter (Appendix L), the survey (including directions), and the self-addressed return envelope identifying the researcher. The participant cover letter included the researcher's name, address, and phone number.

Completed surveys were reviewed by the researcher only. The surveys were numerically coded to facilitate record keeping and information retrieval. Following appropriate numerical coding of the Biographical Data Sheet, data from the three instruments was logged onto computer disc and entered into the SPSS-PC program. Stewart Consulting was consulted for data analysis. Back-up files were made and stored in a fire-proof box at the researcher's residence. Surveys are maintained at the researcher's residence and do

not identify the participant's names. Access to specific survey information is available to the researcher only.

Pilot Study

A pilot study was conducted to ascertain reliability of the study and if indicated to refine the layout and grammar (not the content) of the research instruments. Five active duty AF members were surveyed to determine time appropriateness, clarity of questions, effectiveness of instructions, grammatical suggestions, and completeness of response sets.

Following review of the five pilot studies, minor grammatical changes were made to facilitate written communication. A descriptor, "less than 40 hours per week" on the Biographical Data Sheet which described the participant's work hour habits was added. The revised surveys were then forwarded to the UNLV' Human Subjects Institutional Review Board and the Department of Nursing's Human Subjects Rights Committee. The pilot study participants were not included in the research sample.

Ethical Considerations

Ethical considerations were reviewed and approved by the following entities: thesis committee; UNLV' Department

of Nursing, UNLV' Human Subjects Institutional Review Board; and the AF base commander.

Prospective subjects were treated as autonomous individuals by informing them about the study and allowing them to choose to participate. No compensation was awarded to the subjects for completion of the survey. Subjects were free from constraint, coercion, or undue influence of any kind to participate in the study. Participants were assured confidentiality and protection. Subjects were informed of the purpose of the study, the identity of the researcher, and the right to refuse to participate in the cover letter of the questionnaire. Consent of the participant was implied by completing the survey.

The benefit risk ratio was assessed. Time taken away from duty was an identified risk. However, the participants were encouraged to complete the questionnaire on off-duty time.

Expected benefits from the research were the identification of determinants of health promotion behavior. With this information, the AF will be able to formulate interventions to assist the active duty person in reaching and maintaining their optimal health state. Additionally, new nursing knowledge will be generated and the participant's understanding of the research process may be increased.

Following calculation of benefits and risks, the benefits were believed to be greater than the expected risks. The AF base commander, UNLV' Nursing Department, and the UNLV' Human Subjects Institutional Review Board confirm the overall benefits of the study.

Data Analysis

Six hundred surveys were distributed in November of 1996. Eight surveys were returned to the researcher due to the unavailability of the participant. Two hundred and nineteen surveys were collected at the base hospital and forwarded to the researcher. Two surveys were omitted from analysis because 50% of the data were missing. Hence, 217 surveys were available for statistical analysis, signifying a return rate of 36% of completed surveys. Sample size was adequate for desired effect size and power.

Demographic characteristics, locus of control, and health promotion data were analyzed descriptively to provide information on the characteristics of the sample. Scores from the MHLC and the Biologic Data Sheet were calculated to determine their relationship with overall health promotion behaviors (identified in the HPLPII).

The hypotheses were tested in the following manner:

1. Locus of control predicts health promotion behaviors in active duty AF personnel. Multiple regression

analysis was used to determine if the participant's locus of control (internal, powerful others, or chance) could predict reported health promotion behavior. The locus of control rating, extracted from the MHLC scale, was the independent variable. The dependent variable was the overall score from the HPLPII.

2. Demographic characteristics (age, gender, marital status, ethnicity, annual total household income, children living in the home, education, military rank, occupation, and hours worked per week) predict health promotion behaviors in active duty AF personnel. Multiple regression was utilized to determine the predictive relationship between demographic characteristics and reported health promotion behaviors. The data obtained from the Biographical Data Sheet were the independent variables. The overall score from the HPLPII was the dependent variable.

Methodological Limitations

Study limitations exist due to the use of a questionnaire where the subject may overestimate or underestimate their health promotion activity. The self-report/actual behavior discrepancy must be examined when interpreting the results.

Additionally, the setting in which the participants complete the questionnaire may be distracting, hence incorrect information may have been collected.

Therefore, this study's findings are limited to the surveyed AF base. Further generalization of the survey's results may not be prudent.

Summary

This chapter focused on the methodology that was utilized in this investigation. The methods and procedures for this study have been extensively analyzed to strengthen the credibility of the statistical results and conclusions.

The random sample of active duty AF personnel was obtained from an AF base located in the southwest region of the U.S.. Following approval from appropriate agencies, a cover letter, Biographical Data Sheet, MHLC scale, and HPLPII was randomly distributed to 600 active duty personnel.

Two hundred and seventeen completed surveys were returned to the researcher. Data was logged onto a computer disk to expedite data analysis. The hypotheses were tested utilizing descriptive statistics and multiple regression.

The research design, sample, setting, population, measurement methods, procedure, and data analysis are appropriate in determining the predictive relationship

between demographics characteristics, locus of control, and health promotion activities in active duty AF personnel.

Ethical considerations were reviewed and communication of findings will enhance military, nursing research.

CHAPTER FIVE

DATA ANALYSIS

Introduction

Six hundred surveys were randomly distributed at an Air Force (AF) base located in the southwestern region of the United States (U.S.). Two hundred and seventeen were returned and available for data analysis. The return rate was 36%.

This chapter reports the empirical evidence related to determinants of health promotion behaviors in active duty AF personnel. The data were analyzed using descriptive statistics and regression analysis.

Statistical analyses are reported according to the frequencies reported in the three instruments and the findings related to the two hypotheses. The computer program, SPSS-PC was used to statistically analyze the results. Tables, representing the narrative content, are displayed in Appendix M.

Frequency Results

Biographical Data Sheet

The sociodemographic characteristics of the sample were obtained by referencing the Biographical Data Sheet.

Descriptive statistics were used to identify the attributes of the sample. Tables 1, 2, 3, and 4 (Appendix M) describe the sociodemographic attributes of the sample.

The ages of the participants were calculated as a continuous variable with the central tendencies, range, and standard deviation calculated. The participants' gender, marital status, ethnicity, annual total household income, children living in the home, education, military rank, occupation, and hours worked per week were expressed as discrete variables. Frequencies and percentage scores were calculated for these descriptors.

Demographic Characteristics of Sample. As depicted in Table 1 (Appendix M), the age range was from 19 to 48 years of age. The mean age was 30.9 years old with a standard deviation of 7.0 years. The median age was 30.0 years old. The mode age was determined to be 28. The most frequent age span ($n=52$) identified in the sample was from 26-30 (24%).

The survey participants were predominantly male. One hundred and seventy-five (80.6%) of the participants were men and 42 (19.4%) participants were female.

Marital status was included in the Biographical Data Sheet. One hundred and thirty-six (62.7%) participants were married, 52 (24%) participants were single (not living with partner), 18 (8.3%) were divorced, 6 (2.8%) were separated, 5 (2.3%) were single (living with partner), and no respondents were widowed.

Table 2 (Appendix M) describes ethnicity, annual total household income, and children living in the home. Ethnicity was reported by all respondents with 157 (72.4%) being Caucasian, 30 (13.8%) African-American, 14 (6.5%) Hispanic, 11 (5.1%) Asian, and 5 (2.3%) identifying themselves as "other".

Within the sample, the majority (52.6%, $n=113$) of the participants identified their annual total household income as \$25,001-\$50,000. An income of \$0-\$25,000 was reported by 58 participants (27.0%); 31 (14.4%) had an income of \$50,001-\$75,000; 8 (3.7%) had an income of \$75,001-\$100,000; and 5 (2.3%) had an income of \$100,001 or more. Two items were reported as missing.

One hundred and sixteen (53.5%) participants had children living in the home. The remaining 101 (46.5%) subjects did not have children living in the home.

Table 3 (Appendix M) describes educational level and military rank within the sample of AF personnel. One hundred and seven (49.8%) participants' highest level of education was specialty AF training. This level of training refers to the specialized AF training required of enlisted personnel to perform their jobs. Associate degrees were held by 47 (21.9%); 22 (10.2%) participants had attained a four year degree; 18 (8.4%) subjects had a masters degree; 15 (7.0%) had received a civilian technical degree (vocational school, etc.); and 6 (2.8%) received a doctorate. Two items were reported as missing.

Military rank was also included in the Biographical Data Sheet. Among the 184 (84.8%) identified enlisted personnel; 55 (25.3%) were Staff Sergeants (E-5); 35 (16.1%) were Senior Airmen (E-4); and 29 (13.4%) were Master Sergeants (E-7). The remaining enlisted categories had frequencies of 26 or less. Officers ($n=33$, 15.2%) were represented with 13 (6.0%) Captains (O-3) and 11 (5.1%) Majors (O-4).

Table 4 (Appendix M) describes occupation and hours worked per week within the sample of AF personnel. AF Specialty Code (AFSC) was analyzed to identify occupation. Fifty varying occupation categories were noted, with a range of scores from 1-60. A descriptor with a frequency of ten or greater is presented in Table 4. Manned Aerospace

Maintenance included 60 (27.6%) participants. Munitions and Weapons included 17 (7.8%) respondents. Security Police included 15 (6.9%) participants. Civil Engineering was represented with 12 (5.5%) participants. Command Control Systems Operations included 10 (4.6%) participants. The remaining 103 (47.6%) participants, not identified by the preceding AFSCs, were identified as "other" on Table 4. These AFSCs had frequencies of nine or less.

Lastly, average hours worked per week were included in the Biographical Data Sheet. One hundred and fifty-six (71.9%) worked 40-50 hours per week; 38 (17.5%) worked 51-60 hours per week; 12 (5.5%) worked 61-70 hours per week; 7 (3.2%) participants worked less than 40 hours per week; and 4 (1.8%) worked 71-80 hours per week.

Multidimensional Health Locus of Control Scale (MHLC)

The MHLC scale (Form A) was utilized to determine the survey participants' perceived control of health. Three subscales; internal health locus of control, powerful others health locus of control, and chance health locus of control are included in the MHLC scale. Respondents selected from a six point Likert scale; strongly agree (6), moderately agree (5), slightly agree (4), slightly disagree (3), moderately disagree (2), and strongly disagree (1). The mean scores for the three subscales are presented in Table 5 (Appendix M).

The means of the MHLC subscale scores were: internal locus of control, 26.9 ($SD=+4.24$); powerful others locus of control, 17.7 ($SD=+4.78$); and chance locus of control 16.8 ($SD=+4.13$). The possible range of scores for each subscale was 6-36.

Additionally, individual subscale scores were evaluated. One hundred and eighty-five (85.3%) participants were identified as internally controlled; 24 (11.1%) were identified as being controlled by powerful others; and 8 (3.7%) were controlled by chance. This was calculated by referring to the subscale scores and identifying the subscale score with the highest value. The higher score indicated greater perceived control of health in that subscale. The subscale scores that were rated lower indicate less perceived control in those subscales. Table 6 illustrates the results (Appendix M).

Health Promoting Lifestyle Profile II (HPLPII)

The HPLPII was utilized to assess the six dimensions and the overall health promoting lifestyle of 217 AF personnel. Respondents selected from a four point Likert scale; never (1), sometimes (2), often (3), and routinely (4). Self-reported health promotion lifestyle behavior among AF personnel are shown in Table 7 (Appendix M).

The six dimensions were analyzed utilizing descriptive statistics. Stress management, interpersonal relations, spiritual growth, nutrition, physical activity, and health responsibility were analyzed. One of the six dimensions, identified as subscales, was reflected in each question of the survey. The overall HPLPII score reflects self-reported health promotion behavior in all dimensions. The higher the reported score, the stronger the respondent's health promotion behavior. The overall HPLPII scores have a possible range of 52-208.

The means of the HPLPII subscales among the sample of 217 AF personnel were: spiritual growth, 26.4 ($SD=\pm 4.93$); interpersonal relations, 25.6 ($SD=\pm 5.43$); nutrition, 21.2 ($SD=\pm 4.97$); physical activity, 19.2 ($SD=\pm 5.53$); health responsibility, 19.1 ($SD=\pm 4.63$); and stress management, 18.8 ($SD=\pm 4.00$). The overall HPLPII score, representing 52 items on the survey, was 130.9 ($SD=\pm 22.933$).

Meaningful comparisons of subscale scores requires further analyses due to an unequal number of items in each subscale (Walker, 1995). The subscales have different highest potential scores because of an unequal number of survey questions. Each subscale has eight or nine items reflecting a range of 8-32 or 9-36, respectively. Item responses were analyzed utilizing a 1 to 4 scoring system. The subscale mean (identified in Table 7) was divided by the

number of items (8 or 9) in the subscale. The 1-4 metric means are as follows: spiritual growth, 2.9; interpersonal relationships, 2.8; nutrition, 2.3; physical activity, 2.4; health responsibility, 2.1; stress management, 2.3, and overall health promotion behavior, 2.5. A higher score indicates a greater involvement in behavior related to the specific dimension, a lower score indicates less involvement. Personal health behaviors pertaining to the dimensions of spiritual growth, interpersonal relations, and physical activity were the strongest among this group of participants. Behaviors related to nutrition, health responsibility, and stress management were less prevalent in the sample.

Reliability Analysis

Coefficient alphas were computed for the MHLC scale and the HPLPII. The coefficient alpha was based on the average correlation among items and the number of items on the tool.

The reliability coefficient alpha obtained from the MHLC scale were 0.58 for the internal locus of control, 0.45 for the chance, and 0.64 for the powerful other's subscales. Duffy (1993) reported Cronbach alphas of 0.75 for internal health locus of control, 0.61 for chance locus of control, and 0.67 for powerful others locus of control for 477 older

persons. This 18 item tool indicated questionable reliability.

The reliability coefficient alpha obtained from the HPLPII was 0.94. This 52 item tool indicated positive reliability.

Results of Hypotheses Testing

Prediction of Health Promotion Behavior by Locus of Control

Hypothesis 1 stated "Locus of control (perceived control of health) predicts health promotion behaviors in active duty AF personnel". The null hypothesis was retained. The simultaneous method of multiple regression analysis ($N = 217$) was utilized using the overall score on the HPLPII as the dependent variable and the mean locus of control subscale scores as the independent variable. Table 8 presents the findings of multiple regression (Appendix M).

Prior to multiple regression analysis, a correlation matrix was accomplished to examine multicollinearity of the independent variables. Weak correlation coefficients were found between: internal locus of control with overall health promotion activities (.12); powerful others locus of control with overall health promotion activities (.03); and chance locus of control with overall health promotion activities

(-.19). All correlations were below 0.65. Therefore, the variables were not redundant (Burns & Grove, 1993).

Assumptions regarding multiple regression were maintained. The variables were measured without noticeable error. The variables were treated as interval data. The data residuals were not correlated. Dependent variable scores came from a normal distribution. Scattergrams showed no association or relationship (Appendix N). Overall, multivariate normality, linearity, and homoscedasticity were evident in the data.

The R square indicates that only 3% of the variance in health promotion behavior can be explained by locus of control. The only significant t was .01 for chance locus of control. However, since the R Square was only 3% it was not statistically significant. The F value was 2.3 ($p < .07$). Therefore, as a predictor, locus of control was not a significant determinant of health promotion behavior in AF personnel.

Prediction of Health Promotion Behavior by Demographic Variables

Hypothesis 2 stated "Demographic characteristics (age, gender, marital status, ethnicity, annual total household income, children living at home, education, military rank, occupation, and hours worked per week) predict health

promoting behavior in active duty AF personnel". The null hypothesis was retained.

Following dummy coding of the nominal and ordinal data, the results were entered into the SPSS-PC program utilizing the simultaneous method of multiple regression. Table 9 reports the results (Appendix M).

Prior to multiple regression analysis, a correlation matrix was accomplished to review multicollinearity of the independent variables. Weak correlation coefficients were found between age, children living in the home, education level, ethnicity, gender, income, military rank, marital status, hours worked per week and overall health promotion activities. Although multicollinearity does not affect predictive power, it may affect generalizability. All correlations were below 0.80 and all but one relationship was below .65. The correlation between military rank and education level was .76. Hence, the independent variables were not redundant (Burns & Grove, 1993).

Assumptions regarding multiple regression were maintained. The variables were measured without noticeable error. Following coding of nominal and ordinal data, the variables were treated as interval data. The data residuals were not correlated. Dependent variable scores came from a normal distribution. A scattergram revealed no association or relationship between the variables (Appendix O).

Overall, multivariate normality, linearity, and homoscedasticity were evident in the data. The participants' occupation was not analyzed due to the diverse frequencies.

Multiple regression was conducted using the overall score of the HPLPII as the dependent variable and the nine demographic characteristics (occupation omitted) as the independent variables. Based on this analysis, there was not a significant relationship between the self-reported demographic characteristics and the overall HPLPII score of AF personnel.

Although gender ($p=.00$) and hours worked per week ($p=.04$) were significant, the R square indicated that only 9% of the variance in health promotion behavior can be explained by identified demographic characteristics. The F value was 2.4 ($p<.01$). Therefore, demographic characteristics were not significant predictors of health promotion behavior in AF personnel.

Summary of Results

The findings of this study ($N=217$) were as follows. The average participant was a 30 year old, male, married, Caucasian, Staff Sergeant. The participant had an annual total household income between \$25,001-\$50,000, was AF

specialty trained, with children living in the home, and working 40-50 hours per week.

Subjects scored highest on the subscales of interpersonal relations, spiritual growth, and nutrition included in the HPLPII. The overall mean score on the HPLPII was 2.5. Internal control was the highest rated subscale on the MHLC scale.

Data analysis of the instruments exhibited no significant predictive relationship between health locus of control (perceived locus of control) and health promotion behavior in active duty AF personnel. In addition, there was no significant predictive relationship between demographic characteristics (age, gender, marital status, ethnicity, annual total household income, children living at home, education, military rank, and hours worked per week) and health promotion behavior in active duty AF personnel. Occupation was not included in the analysis. Ultimately, locus of control and demographic characteristics (independent variables) did not demonstrate any significant, predictive relationships with health promotion behaviors (dependent variable).

Summary

This chapter presented the analysis of the data that examined demographic characteristics, health locus of control, and health promotion behavior of 217 active duty AF personnel. The sample was statistically described and then data was organized and presented according to the two hypotheses.

Descriptive statistics were used to identify and describe the demographic characteristics, perceived control of health, and health promotion behaviors of the survey participants. Hypotheses testing was performed by simultaneous multiple regression. Regression analysis was utilized to predict the relationship between locus of control and the overall HPLPII score. Additionally, regression analysis was utilized to predict the relationship between demographic characteristics and the overall HPLPII score. Results are communicated in table and narrative formats.

CHAPTER SIX

SUMMARY OF THE STUDY

Introduction

This chapter summarizes the findings of the study in relationship to its purpose, literature review, and conceptual framework. Discussion of the research findings, limitations of the study, and conclusions are presented. Implications for nursing and recommendations for additional nursing research conclude the chapter.

Summary

This nursing study evolved from national goals and objectives focused on improving the health of all Americans by the 21st century. Upon review of health promotion literature, it was determined that a paucity of nursing research regarding determinants of military, health promotion practices was available. Rationale for this study revolved around targeting high-risk subgroups within the military infrastructure, securing a physically and mentally

sound military force, and ultimately reducing Department of Defense (DOD) health care costs.

The purpose of the study was to determine the extent perceived health locus of control and demographic characteristics predict health promotion activities among active duty Air Force (AF) personnel. Demographic characteristics included: age, gender, marital status, ethnicity, education level, annual total household income, children living in the home, military rank, occupation, and hours worked per week.

Health promotion activities, perceived health locus of control, and demographic characteristics were thoroughly investigated. The concepts investigated in the literature review included; health promotion, health promotion models, locus of control, and demographic and military health promotion research.

Pender's 1987 Health Promotion Model (HPM) was utilized to guide the study. Perceived control of health (cognitive-perceptual factor) and demographic characteristics (modifying factors) were extracted from Pender's model to investigate determinants of health promotion behavior in AF personnel. As described by Pender, these two variables impact an individual's participation in health promotion behavior and ultimately their attainment of self-actualization, physical health, and mental well-being.

Wallston and Wallston's (1996) Multidimensional Health Locus of Control (MHLC) scale; Pender, Walker, and Sechrist's (1995) Health Promotion Lifestyle Profile II (HPLPII); and a researcher-designed Biographical Data Sheet were utilized to collect data regarding perceived locus of control, health promotion behavior, and demographic variables, respectively. The random sample of 217 active duty AF personnel was obtained from a AF base in the southwestern region of the United States. Descriptive statistics and multiple regression were utilized to examine the data.

Discussion of Findings and Conclusions

The findings of this study are supported by the results of earlier studies and reflect mixed support in regards to Pender's 1987 Health Promotion Model. Conclusions will be introduced according to the relevant findings.

Multidimensional Health Locus of Control

The majority of the participants identified themselves as having internal locus of control. Zindler-Wernet & Weiss' (1987) study of 123 employees working at a large health sciences campus confirm the results of this study. Wallston, Wallston, and Devellis (1978) determined the mean scores for internal locus of control, powerful others locus

of control and chance locus of control to be 25.104, 19.99, and 15.57, respectively. In addition, Duffy (1989) determined the mean internal locus of control score of employed women ($N=420$) to be greater than chance health locus of control or powerful others locus of control. Ultimately, many other research projects mimic this study's results in regards to MHLC scale results.

Demographic Characteristics

The sample drawn from a southwest AF base was compared to the active duty AF population (Appendix P). Available statistics included; age, gender, ethnicity, marital status, and educational level. Overall, the sample was a reasonable representation of the active duty AF population.

Health Promoting Lifestyle Profile II

Overall HPLP mean scores of previous studies were compared to this study's overall HPLPII score. This sample's overall mean score was 2.5 (utilizing 1 to 4 measurement). Duffy's (1989) study of female employees was 2.6. Duffy, Rossow, & Hernandez' (1996) mean overall score for Mexican-Americans was 2.7. In addition, Lusk, Kerr, and Ronis' (1995) study of blue-collar, skilled, trade, and white-collar workers revealed an overall mean health promotion score of 2.6. In essence, active duty AF

personnel tended to practice fewer health promoting activities when compared to other groups.

In addition, active duty military personnel may not participate in health promoting activities because they currently receive free health care and are not motivated financially to be "healthy". Air Force personnel, by not monetarily investing in their health care, may take their health for granted and not recognize the financial benefits of a health promoting lifestyle.

Additionally, unhealthy lifestyle practices may preclude healthy living. Higher incidences of smoking and alcohol use in the military (Bray, et al., 1991; Johnson et al., 1993) may impact the member's participation in health promotion activities.

Social isolation is another factor which may impact health promotion behavior in the military setting. Within the military, the individual may be separated from their support systems and may not be fulfilled socially and emotionally. Ultimately, social isolation impacts a person's state of wellness.

Lastly, the findings regarding less-than-optimal health promoting activities in AF personnel, may be due to the local community. The community is fast-paced and offers 24 hour entertainment which may affect the lifestyle of many AF members. It is unlike any other community in the U.S. and

may contribute to the below-average health promotion behavior in the sample. Further investigation is warranted.

Locus of Control and Health Promotion Behavior

The first hypothesis evaluated the relationship between locus of control and health promotion behavior. Perceived locus of control (internality vs. externality), as determined by the MHLC scale, was not a predictive determinant of the participant's overall HPLPII score.

From these findings, the conclusion is that neither internal or external (powerful others or chance) locus of control determines personal health promotion lifestyle practices among active duty AF personnel. These findings support Brown, Muhlenkamp, Fox, and Osborn's (1983) study of 63 healthy, middle-class adults. They determined that no relationship existed between internal locus of control and high health value, and health related information-seeking behavior. Gillis and Perry (1991) determined that physical activity did not have a significant impact on the participant's self-esteem, health status, or locus of control of 126 mid-life women. Lastly, Laffrey and Isenberg (1983) determined there was no relationship between internal locus of control and physical activity amongst 70 women, aged 24-65 years old.

Pender's 1996 edition of Health Promotion in Nursing Practice identified locus of control as an unreliable predictor of specific health behaviors. She notes "When perceived control of health was a significant predictor, the direction of the relationship was sometimes other than that predicted (Pender, 1996, p. 65). Therefore, she eliminated perceived control of health from her 1996 model. This study confirms the deletion of locus of control from Pender's 1996 model. Locus of control is an unreliable predictor of health promoting behavior.

Demographic Characteristics and Health Promoting Behavior

The second hypothesis evaluated the relationship between demographic characteristics (age, gender, marital status, ethnicity, education level, annual total household income, children living in the home, military rank, occupation, and hours worked per week) and health promotion behavior. The findings of this research study disclosed that there was no predictive relationship between demographic characteristics and the HPLPII score in active duty AF personnel.

The conclusions support Duffy's (1993) study of 477 persons 65 years and older. Her findings failed to uphold the predicted relationships between demographic characteristics and health promotion behavior, except for

higher annual income. Weitzel and Waller (1990) determined that demographic predictors were not influential in a small ($n=35$) group of African-American blue-collar workers.

Pender (1996) has maintained "personal factors" in her 1996 HPM. However, this study's findings indicate that age, gender, marital status, ethnicity, education level, income, children living in the home, military rank, and hours worked per week were not associated with health promotion behavior. Therefore, this study's investigation of demographic characteristics, failed to support Pender's 1987 and 1996 HPMs.

Limitations

A limitation of the study includes the sampling of active duty personnel from one base. The results can not be generalized throughout the AF because of its limited sampling. Prudent interpretation is warranted.

A self-rated behavior tool may have elicited inaccurate results. The accuracy of the results cannot be controlled, therefore there is a possibility of inaccurate data.

Pender's model was only partially tested. Many other variables are included in the model. Therefore, the results can not be generalized.

The tools utilized are questionable. The HPLPII has not been extensively researched and comparisons between the

means of HPLP and HPLPII scores may not be prudent. In addition, the MHLC reliability is questionable.

Implications for Nursing

The conceptual framework for this study was 1987 Pender's HPM. Pender contends that cognitive-perceptual factors (perceived locus of control) and modifying factors (demographic characteristics) influence a person's participation in health promotion activities. The model guides nurses in assessing the client's likelihood to participate in activities which can lead to self-actualization, well-being, and fulfillment. The findings of this study do not support the relationship between perceived locus of control, demographic characteristics, and health promotion behavior. However, the findings from this study cite important knowledge for nurses concerned with their client's state of physical and mental wellness.

The overall health promoting lifestyle behavior score of this sample of active duty AF personnel is below other samples. The participants' overall HPLPII score indicates that more emphasis should be placed on health promotion activities within the military. Nutrition, physical activity, health responsibility, and stress management are dimensions that nurses should routinely assess and implement strategies that would increase the likelihood of action on

the part of the client. These dimensions, as well as spiritual growth and interpersonal relations, can be incorporated into health programs, risk appraisals, and routine checkups.

Within the military healthcare structure, nurses can direct the client to numerous base and community resources. DOD medical care, wellness centers, nutritional counseling, family support services, mental health resources, support groups, exercise programs, and other health resources are available to facilitate increased wellness and fulfillment. Specific health promotion activities should be incorporated into each client's plan of care.

Self-identification of internal locus of control, distinguished most participants as perceiving themselves to be in charge of their health. Although the results do not support a predictive relationship between perceived control and health promotion behavior, the researcher acknowledges the importance of patient participation. The researcher's personal and clinical experience supports perceived control as a determinant of a healthy lifestyle. Therefore, nurses should encourage and facilitate this behavior. Encouraging the client to make independent decisions and be an active participant in their health care plan will enhance the client's commitment to their health and personal well-being. Nurse managers, clinicians, educators, and administrators

have a responsibility to the client to promote and facilitate individualized, holistic, client-centered nursing care.

Based on the findings of the two hypotheses, nurses do not need to structure their health promotion teaching and implementations on the client's locus of control, age, gender, marital status, ethnicity, income, children living in the home, educational level, military rank, and hours worked per week. As illustrated in the findings, these variables do not predict health promotion activities. Therefore, nursing assessments and actions should incorporate other variables. Perceived barriers to action, benefits of action, self-efficacy, interpersonal influences, and situational influences can influence health promotion behavior (Pender, 1996). Ultimately, a client's health promotion lifestyle can not be generalized according to demographic characteristics and locus of control. Health promotion is truly a multifaceted concept. Hence, additional nursing research regarding health promotion determinants is warranted to benefit the client, family, and community.

Recommendations

This study provides new information about the health promotion practices of AF personnel. Since locus of control

and demographic characteristics did not demonstrate a relationship with health promotion activities, describing and analyzing other determinants that may influence involvement in health promotion practices is recommended. Hence, Pender's 1996 HPM and other nursing theorists' models should be actively studied to determine their validity and appropriateness within the health care arena.

Additional information should be retrieved regarding the military's health promotion programs. The researcher contends that dimensions identified in the HPLPII are not considered health promotion indicators within the military system. Spiritual growth, stress management, and interpersonal relations are not stressed within the military infrastructure. Furthermore, disease prevention activities are included in the wellness center's agenda. Therefore, the researcher believes there is a significantly different definition of health promotion activities between Pender's model, the HPLPII, and AF practices.

The knowledge base regarding health promotion practices is derived from empirical research that seeks to comprehend what actions people take to promote their health and well-being, why individuals choose to participate or not to participate in health promoting activities, and what actions health care professionals can take to promote a healthy lifestyle (Walker, Volkan, Sechrist, and Pender, 1988).

Understanding the relationships among factors that determine health promotion activities will assist AF clients achieve self-actualization and well-being. Recommendations for further study include:

1. A comparison of Air Force, Navy, Marine, and Army personnel and health promotion behaviors.
2. A longitudinal study: Health promotion behaviors and health status in active duty personnel.
3. Tobacco usage and alcohol consumption's effects on health promoting behavior in AF personnel.
4. Social support and health promotion behavior in active duty AF personnel.
5. Differences between participants and non-participants in military wellness centers.

Conclusion

Air Force nurses are challenged daily in the delivery of individualized, client care. Planning appropriate nursing actions and implementing appropriate nursing activities is facilitated by a comprehensive client assessment. A nursing assessment includes a thorough appraisal of health promotion activities in primary, secondary, and tertiary care settings.

Findings, related to this study, support further nursing research to further illustrate the cost-

effectiveness and wellness foundation of health promotion activities. As described, AF personnel were identified as engaging in less than average health promotion behaviors. Hence, to be cost-effective and wellness oriented, military nursing's scope of care must include health promotion nursing actions. These nursing actions will augment the client's level of physical, spiritual, and mental well-being. Additional military nursing research is justified to reach the national goals and objectives of health for all by 2000.

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APPENDIX A

Permission Letter from Dr. Pender



Bridgette J. Grabowski
5436 Walton Heath Avenue
Las Vegas, NV 89122
(702) 641-8358

15 Mar 97

Nola J. Pender, RN, Ph.D., FAAN
Professor and Associate Dean of Academic Affairs and Research
School of Nursing
University of Michigan

Dear Dr. Pender,

I am a masters student at the University of Nevada, Las Vegas. I am also an United States Air Force nurse. As partial fulfillment of my degree, I will be conducting my thesis on "Determinants of Health-Promotion at Nellis Air Force Base, NV.

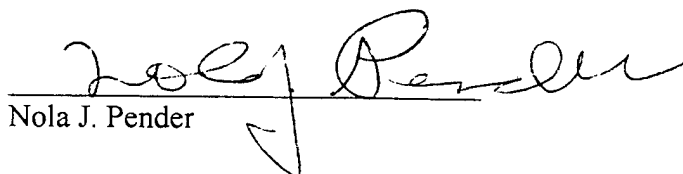
I have reviewed your 1982, 1987, and 1996 Health Promotion Models. I plan to critically analyze the relationship of locus of control, and demographic factors in relationship to active duty health promotion behaviors.

I will incorporate your 1987 model into my study and would appreciate your permission.

Thank you.


Bridgette J. Grabowski

I, Nola Pender, grant Bridgette J. Grabowski permission to utilize the Health Promotion Model (1987).


Nola J. Pender

4/12/97
Date

Appendix B

Air Force Base's Average Strength Report

(November, 1996)



DEPARTMENT OF THE AIR FORCE

99TH MISSION SUPPORT SQUADRON (ACC)
NELLIS AIR FORCE BASE, NEVADA

26 Nov 96

MEMORANDUM FOR "SEE DISTRIBUTION LIST"

FROM: 99 MSS/DPMDR

SUBJECT: Average Strength Report - November 1996

1. Attached is the November 1996 Data Report submitted IAW AFR 35-40. The following information is provided as a quick reference:

	<u>OFFICERS</u>	<u>ENLISTED</u>
ASSIGNED:	837	5625
ATTACHED:	54	4
SUBTOTAL:	891	5629
COMBINED TOTAL:	6520	

Rose Marie Nikovits

ROSE MARIE NIKOVITS, 2Lt, USAF
Chief, Readiness

Attachments:
Distribution List
Strength Summary Report

Global Power For America

APPENDIX C

Base Commander Letter of Approval



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 99TH AIR BASE WING (ACC)

NELLIS AIR FORCE BASE, NEVADA

26 SEP 1996

MEMORANDUM FOR CAPT BRIDGETTE GRABOWSKI

5436 Walton Heath Avenue

Las Vegas NV 89122

FROM: 99 ABW/CC

4430 Grissom Ave Ste 110

Nellis AFB NV 89191-6520

SUBJECT: Air Force Institute of Technology (AFIT) Research Study

Capt Garbowski, you have my approval to conduct the survey at Nellis AFB. However, individuals participating in the survey must do so during their off-duty time.

A handwritten signature in cursive script, reading "John D. Ladieu", is positioned above the printed name.

JOHN D. LADIEU

Colonel, USAF

Commander

Global Power for America

APPENDIX D

Letter to the Base Newspaper (Bullseye)

MEMORANDUM FOR BULLSEYE STAFF

1 Nov 96

FROM: Capt Bridgette Grabowski
5436 Walton Heath Avenue
Las Vegas, NV 89122
(702) 641-8358

SUBJ: Bullseye Article

I am an active duty nurse assigned to the Air Force Institute of Technology (AFIT) at Wright-Patterson, AFB. I have been granted permission by 99 ABW/CC to survey active duty Nellis Air Force Base personnel.

Please run the following item in the base paper on 8 Nov 96 and 15 Nov 96: "A survey, "Determinants of Health Promotion Behavior in Active Duty Air Force Personnel" will be distributed randomly to Nellis Air Force Base personnel in November. The Air Force is currently looking at health promotion and disease prevention issues that will enhance quality of life of active duty personnel. This survey will give insight into ways the Air Force can better meet your health promotion needs. PLEASE support Air Force nursing research by responding to this voluntary survey".

Thank you for your assistance.


BRIDGETTE J. GRABOWSKI, Capt, USAF, NC
Student, AFIT

APPENDIX E

Multidimensional Health Locus of Control Scale

Questionnaire Regarding Attitude

Directions: This questionnaire is designed to determine the way different people view certain important health-related issues. Mark your response which best represents your attitude about each statement. Please make sure you answer every item and circle only one number per item. This is a measure of your personal beliefs, there are no right or wrong answers. It is important that you respond according to your actual beliefs and not according to how you should believe or how you think others want you to believe.

- 1 - Strongly Disagree
- 2 - Moderately Disagree
- 3 - Slightly Disagree
- 4 - Slightly Agree
- 5 - Moderately Agree
- 6 - Strongly Agree

- | | |
|---|-------------|
| 1. If I become sick, I have the power to make myself well again. | 1 2 3 4 5 6 |
| 2. Often I feel that no matter what I do, if I am going to get sick, I will get sick. | 1 2 3 4 5 6 |
| 3. If I see an excellent doctor regularly, I am less likely to have health problems. | 1 2 3 4 5 6 |
| 4. It seems that my health is greatly influenced by accidental happenings. | 1 2 3 4 5 6 |
| 5. I can only maintain my health by consulting health professionals. | 1 2 3 4 5 6 |
| 6. I am directly responsible for my health. | 1 2 3 4 5 6 |
| 7. Other people play a big part in whether I stay healthy or become sick. | 1 2 3 4 5 6 |
| 8. Whatever goes wrong with my health is my own fault. | 1 2 3 4 5 6 |
| 9. When I am sick, I just have to let nature run its course. | 1 2 3 4 5 6 |
| 10. Health professionals keep me healthy. | 1 2 3 4 5 6 |
| 11. When I stay healthy, I'm just plain lucky. | 1 2 3 4 5 6 |
| 12. My physical well-being depends on how well I take care of myself. | 1 2 3 4 5 6 |
| 13. When I feel ill, I know it is because I have not been taking care of myself properly. | 1 2 3 4 5 6 |
| 14. The type of care I receive from other people is what is responsible for how well I recover from an illness. | 1 2 3 4 5 6 |
| 15. Even when I take care of myself, it's easy to get sick. | 1 2 3 4 5 6 |
| 16. When I become ill, it's a matter of fate. | 1 2 3 4 5 6 |
| 17. I can pretty much stay healthy by taking good care of myself. | 1 2 3 4 5 6 |
| 18. Following doctor's orders to the letter is the best way for me to stay healthy. | 1 2 3 4 5 6 |

© Wallston, K., Wallston, B., & Devellis, R., 1996. Reproduction without the author's express written consent is not permitted.
 Permission to use this scale may be obtained by: Dr. K. Wallston, School of Nursing, Vanderbilt University, Nashville, TN 39240.

APPENDIX F

Permission Letter from Dr. Wallston



Bridgette J. Grabowski
5436 Walton Health Avenue
Las Vegas, NV 89122

May 28, 1996
Dr. Kenneth Wallston
School of Nursing
Vanderbilt University
Nashville, TN 39240

Dear Dr. Wallston,

May I have your written permission to use your questionnaire in my thesis: Determinants of health promotion in active duty Air Force personnel at Nellis Air Force Base, NV. I am currently enrolled in the University of Nevada, Las Vegas' nursing masters program and would appreciate your consent.

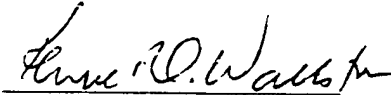
In addition, would you please send me the Multidimensional Health Locus of Control Scale. I'd like to ensure that the scale I have is accurate.

Best wishes!

Sincerely,


Bridgette J. Grabowski, Capt, United States Air Force, BSN

I, KENNETH A. WALLSTON, give permission to Bridgette J. Grabowski to use the "Multidimensional Health Locus of Control" tool in the research study of Air Force personnel.


Kenneth Wallston

Date: 6/3/96

Department of Nursing
4505 Maryland Parkway • Box 453018 • Las Vegas, Nevada 89154-3018
(702) 895-3360 • FAX (702) 895-4807

APPENDIX G

Health Promoting Lifestyle Profile II

Health Promotion Behavior

Directions: This questionnaire contains statements about your present way of life or personal habits. Please respond to each item as accurately as possible, do not skip any item, and mark only one response. Indicate the frequency with which you engage in each behavior by circling the appropriate answer.

1 - Never
2 - Sometimes
3 - Often
4 - Routinely

- | | | | | |
|--|---|---|---|---|
| 1. Discuss my problems and concerns with people close to me. | 1 | 2 | 3 | 4 |
| 2. Choose a diet low in fat, saturated fat, and cholesterol. | 1 | 2 | 3 | 4 |
| 3. Report any unusual signs or symptoms to a physician or other health professional. | 1 | 2 | 3 | 4 |
| 4. Follow a planned exercise program. | 1 | 2 | 3 | 4 |
| 5. Get enough sleep. | 1 | 2 | 3 | 4 |
| 6. Feel I am growing and changing in positive ways. | 1 | 2 | 3 | 4 |
| 7. Praise other people easily for their achievements. | 1 | 2 | 3 | 4 |
| 8. Limit use of sugars and food containing sugar (sweets). | 1 | 2 | 3 | 4 |
| 9. Read or watch TV programs about improving health. | 1 | 2 | 3 | 4 |
| 10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber). | 1 | 2 | 3 | 4 |
| 11. Take some time for relaxation each day. | 1 | 2 | 3 | 4 |
| 12. Believe that my life has purpose. | 1 | 2 | 3 | 4 |
| 13. Maintain meaningful and fulfilling relationships with others. | 1 | 2 | 3 | 4 |
| 14. Eat 6-11 servings of bread, cereal, rice or pasta each day. | 1 | 2 | 3 | 4 |
| 15. Question health professionals in order to understand their instructions. | 1 | 2 | 3 | 4 |
| 16. Take part in light to moderate physical activity (such as sustained walking 30 - 40 minutes 5 or more times a week). | 1 | 2 | 3 | 4 |

Health Promotion Behavior Questionnaire (continued)

1 - Never
2 - Sometimes
3 - Often
4 - Routinely

- | | | | | |
|--|---|---|---|---|
| 17. Accept those things in my life which I can not change. | 1 | 2 | 3 | 4 |
| 18. Look forward to the future. | 1 | 2 | 3 | 4 |
| 19. Spend time with close friends. | 1 | 2 | 3 | 4 |
| 20. Eat 2-4 servings of fruit each day. | 1 | 2 | 3 | 4 |
| 21. Get a second opinion when I question my healthcare provider's advice. | 1 | 2 | 3 | 4 |
| 22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling). | 1 | 2 | 3 | 4 |
| 23. Concentrate on pleasant thoughts at bedtime. | 1 | 2 | 3 | 4 |
| 24. Feel content and at peace with myself. | 1 | 2 | 3 | 4 |
| 25. Find it easy to show concern, love, and warmth to others. | 1 | 2 | 3 | 4 |
| 26. Eat 3-5 servings of vegetables each day. | 1 | 2 | 3 | 4 |
| 27. Discuss my health concerns with a health professional. | 1 | 2 | 3 | 4 |
| 28. Do stretching exercises at least 3 times per week. | 1 | 2 | 3 | 4 |
| 29. Use specific methods to control my stress. | 1 | 2 | 3 | 4 |
| 30. Work toward long-term goals in my life. | 1 | 2 | 3 | 4 |
| 31. Touch and am touched by people I care about. | 1 | 2 | 3 | 4 |
| 32. Eat 2-3 servings of milk, yogurt, or cheese each day. | 1 | 2 | 3 | 4 |
| 33. Inspect my body at least monthly for physical changes or danger signs. | 1 | 2 | 3 | 4 |
| 34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking). | 1 | 2 | 3 | 4 |
| 35. Balance time between work and play. | 1 | 2 | 3 | 4 |

Health Promotion Behavior Questionnaire (continued)

1 - Never
2 - Sometimes
3 - Often
4 - Routinely

36. Find each day interesting and challenging.	1	2	3	4
37. Find ways to meet my needs for intimacy.	1	2	3	4
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.	1	2	3	4
39. Ask for information from health professionals about how to take good care of myself.	1	2	3	4
40. Check my pulse rate when exercising.	1	2	3	4
41. Practice relaxation or meditation for 15-20 minutes daily.	1	2	3	4
42. Am aware of what is important to me in life.	1	2	3	4
43. Get support from a network of caring people.	1	2	3	4
44. Read labels to identify nutrients, fats, and sodium content in packaged foods.	1	2	3	4
45. Attend educational programs on personal health care.	1	2	3	4
46. Reach my target heart rate when exercising.	1	2	3	4
47. Pace myself to prevent tiredness.	1	2	3	4
48. Feel connected with some force greater than myself.	1	2	3	4
49. Settle conflicts with others through discussions and compromise.	1	2	3	4
50. Eat breakfast.	1	2	3	4
51. Seek guidance or counseling when necessary.	1	2	3	4
52. Expose myself to new experiences and challenges.	1	2	3	4

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APPENDIX H

Permission Letter from Dr. Walker

PERMISSION FORM

I plan to use the Health-Promoting Lifestyle Profile II in a research or evaluation project entitled:
Determinants of Health Promotion in Active Duty Nellis Air Force Base Personnel

I am enclosing a check for ten dollars (\$10.00) payable to the University of Nebraska Medical Center College of Nursing.

Bridgett Grabowski
Print Name

Bridgett Grabowski
Signature

Student, University of Nevada,
Position Las Vegas

702 641-8358
Area Code Telephone #

5436 Walton Heath Avenue
Mailing Address Las Vegas, NV

89127

Permission is granted to the above investigator to copy and use the Health-Promoting Lifestyle Profile II for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in any way and the copyright/permission statement at the end is retained. The instrument may be reproduced in the appendix of a thesis, dissertation or research grant proposal without further permission. Reproduction for any other purpose, including the publication of study results, is prohibited without specific permission.

S. Walker
Susan Noble Walker

6/11/96
Date

Please send two signed copies of this page to:

Susan Noble Walker, Ed.D., R.N., F.A.A.N.
University of Nebraska Medical Center
College of Nursing
600 South 42nd Street
Omaha, Nebraska 68198-5330

APPENDIX I

Biographical Data Sheet

Biographical Data Sheet

Directions: Please complete the following items. Mark only one answer.

1. Age: _____ Years
2. Gender: _____ Male
_____ Female
3. Marital Status: _____ Single (not living with partner)
_____ Single (living with partner)
_____ Married
_____ Separated
_____ Divorced
_____ Widowed
4. Ethnicity: _____ Caucasian/White
_____ African-American/Black
_____ Hispanic
_____ Asian
_____ Other (Please specify: _____)
5. Annual Total Household Income: _____ \$0 - \$25,000
_____ \$25,001 - \$50,000
_____ \$50,001 - \$75,000
_____ \$75,001 - \$100,000
_____ \$100,001 +
6. Children living in your home: _____ Yes
_____ No
7. Highest Level of Education Completed (check highest, check only one):
_____ Specialty Air Force Training
_____ Civilian Technical Degree (vocational school, etc.)
_____ Associate Degree
_____ Four year degree
_____ Masters degree
_____ Doctorate

Biographical Data Sheet (continued)

8. Military Rank: ☐ E-1 ☐ O-1
☐ E-2 ☐ O-2
☐ E-3 ☐ O-3
☐ E-4 ☐ O-4
☐ E-5 ☐ O-5
☐ E-6 ☐ O-6
☐ E-7 ☐ O-7
☐ E-8 ☐ O-8
☐ E-9 ☐ O-9

9. Air Force Specialty Code (AFSC): _____

10. Average Hours Worked Per Week: ☐ Less than 40 hours/week
☐ 40-50 hours/week
☐ 51-60 hours/week
☐ 61-70 hours/week
☐ 71-80 hours/week

APPENDIX J

University of Nevada, Las Vegas

Department of Nursing

Human Subjects Rights Committee

Approval Letters



October 14, 1996

Bridgette J. Grabowski, Capt, USAF, NC
Air Force Institute of Technology Graduate Student

Dear Bridgette,

The Human Subjects Rights Committee of the Department of Nursing has approved your proposed study "Determinants of Health Behavior in Active Duty Air Force Personnel" with the following recommendation.

1. On the informed consent sheet clarify if the return of the questionnaire will be completely anonymous or not.

You have an interesting study and the Committee wishes you well with its implementation. If you have any changes in the protocol please inform the committee of your changes.

Sincerely,

A handwritten signature in cursive script, reading "Margaret Louis".

Margaret Louis, RN, PhD
Chairperson, HSR Committee
Department of Nursing

Department of Nursing
4505 Maryland Parkway • Box 453018 • Las Vegas, Nevada 89154-3018
(702) 895-3360 • FAX (702) 895-4807

UNIVERSITY OF NEVADA, LAS VEGAS
PROTOCOL FORM APPROVAL SHEET
FOR RESEARCH INVOLVING HUMAN SUBJECTS

Log Number: _____

Title of Project: Determinants of Health Behavior in Active Duty Air Force Personnel

Investigator: Bridgette J. Grabowski (student) and S. Kowalski, RN, PhD

After reviewing this proposal, the members of the _____

Review Committee have indicated below their approval/disapproval of this proposal.

Signature of Committee Members

Approve Disapprove

<u>Sue Witt</u>	<u>✓</u>	_____
<u>Janne Lander</u>	<u>✓</u>	_____
<u>Margaret A. Zawattaw</u>	<u>✓</u>	_____
<u>Margaret Lander</u>	<u>✓</u>	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The above named project is hereby approved/disapproved (circle one).

Date: 18 Oct 1996

Margaret Lander

APPENDIX K

University of Nevada, Las Vegas
Human Subjects Institutional Review Board
Approval Letter



DATE: October 4, 1996

TO: Bridgette J. Grabowski (NUR)
M/S 3018

FROM: *W. Schulze*
Dr. William E. Schulze, Director
Office of Sponsored Programs (X1357)

RE: Status of Human Subject Protocol Entitled:
"Determinants of Health Behavior in Active Duty
Air Force Personnel"

OSP #501s1096-087e

The protocol for the project referenced above has been reviewed by the Office of Sponsored Programs and it has been determined that it meets the criteria for exemption from full review by the UNLV human subjects Institutional Review Board. This protocol is approved for a period of one year from the date of this notification and work on the project may proceed.

Should the use of human subjects described in this protocol continue beyond a year from the date of this notification, it will be necessary to request an extension.

cc: S. Kowalski (NUR-3018)
OSP File

APPENDIX L

Survey Cover Letter

MEMORANDUM FOR SURVEY PARTICIPANTS

15 Nov 96

FROM: Capt Bridgette J. Grabowski
5436 Walton Heath Avenue
Las Vegas, NV 89122
(702) 641-8358

SUBJ: Health Promotion Survey

Please take advantage of the following opportunity to enhance your healthcare system. The Air Force is currently looking at health promotion issues that will enhance quality of life of active duty personnel and their dependents. This survey will give insight into ways the Air Force can better meet your health promotion needs.

You have been randomly selected from Nellis Air Force Base active duty personnel to participate in this study. It will take approximately 10 minutes of your non-duty time. The information you provide will be kept confidential and available only to myself. Your name will not be identified in any report and return of the survey will be anonymous. Participation in this study is completely voluntary.

After reading the directions, please complete the survey. The accuracy of your information will greatly enhance the results. Upon completion of the questionnaire, place the survey in the enclosed addressed envelope, and place it in base distribution. Please return the survey by 6 Dec 96.

If you have any questions about the study, please contact me. Questions about the rights of research subjects can be directed to UNLVs' Office of Research Administration, (702) 895-1357.

I sincerely appreciate your participation in the study. Thank you.


BRIDGETTE J. GRABOWSKI, Capt, USAF, NC
Graduate Student, Air Force Institute of Technology

APPENDIX M

Data Tables

Table 1

Sample Demographics Regarding Age, Gender, and Marital
Status (N=217)

Variable	Frequency	Percent	Central Tendency
<hr/>			
<u>Age</u>			
20 years or less	14	6.5%	Mean: 30.9
21-25	43	19.9%	
26-30	52	24.1%	
31-35	49	22.7%	Mode: 28.0
36-40	38	17.6%	
41-45	16	7.5%	
46-50	4	1.9%	
<u>Gender</u>			
Male	175	80.6%	
Female	42	19.4%	
<u>Marital Status</u>			
Single (not living with partner)	52	24.0%	
Single (living with partner)	5	2.3%	
Married	136	62.7%	
Separated	6	2.8%	
Divorced	18	8.3%	
Widowed	0		

Note. Age: SD=7.0, range 19-48 years of age. From the
Biographical Data Sheet.

Table 2

Sample Demographics Regarding Ethnicity, Annual Total
Household Income, and Children Living in the Home (N=217)

Variable	Frequency	Percent
<u>Ethnicity</u>		
Caucasian/White	157	72.4%
African-American/Black	30	13.8%
Hispanic	14	6.5%
Asian	11	5.1%
Other	5	2.3%
<u>Annual Total</u> <u>Household Income</u>		
\$0-\$25,000	58	27.0%
\$25,001-\$50,000	113	52.6%
\$50,001-\$75,000	31	14.4%
\$75,001-\$100,000	8	3.7%
\$100,001+	5	2.3%
<u>Children Living</u> <u>in the Home:</u>		
Yes	116	53.5%
No	101	46.5%

Note. From the Biographical Data Sheet.

Table 3

Sample Demographics Regarding Level of Education
and Military Rank(N=217)

Variable	Frequency	Percent
<u>Level of Education</u>		
Specialty AF Training	107	49.8%
Civilian Technical Degree	15	7.0%
Associate Degree	47	21.9%
Four Year degree	22	10.2%
Masters Degree	18	8.4%
Doctorate Degree	6	2.8%
<u>Military Rank</u>		
Airman Basic (E-1)	1	.5%
Airman (E-2)	5	2.3%
Airman First Class (E-3)	23	10.6%
Senior Airman (E-4)	35	16.1%
Staff Sergeant (E-5)	55	25.3%
Technical Sergeant (E-6)	26	12.0%
Master Sergeant (E-7)	29	13.4%
Senior Master Sergeant (E-8)	8	3.7%
Chief (E-9)	2	.9%
Second Lieutenant (O-1)	3	1.4%
First Lieutenant (O-2)	4	1.8%
Captain (O-3)	13	6.0%
Major (O-4)	11	5.1%
Lieutenant Colonel (O-5)	2	.9%
Colonel (O-6)	0	0
Brigadier General (O-7)	0	0
Major General (O-8)	0	0
Enlisted (E-1 to E-9)	184	84.8%
Officer (O-1 to O-9)	33	15.2%

Note. From the Biographical Data Sheet.

Table 4

Sample Demographics Regarding Occupation (Air Force
Specialty Code) and Hours Worked per Week (N=217)

Variable	Frequency	Percent
<u>Air Force</u>		
<u>Specialty Code</u>		
Manned Aerospace Maintenance	60	27.6%
Munitions and Weapons	17	7.8%
Security Police	15	6.9%
Civil Engineering	12	5.5%
Command Control Systems Operations	10	4.6%
*Other (50 categories)	103	47.6%
<u>Average Hours</u>		
<u>Worked Per Week</u>		
<40 hours/week	7	3.2%
40-50 hours/week	156	71.9%
51-60 hours/week	38	17.5%
61-70 hours/week	12	5.5%
71-80 hours/week	4	1.8%

Note. From the Biographical Data Sheet. *=1 AFSC frequency of 9, 1 AFSC frequency of 7, 3 AFSC frequencies of 6, all other items were frequencies of 5 or less.

Table 5

Locus of Control in AF Personnel (N=217)

Variable	Mean	<u>SD</u>
Internal Locus of Control	26.9	<u>+4.24</u>
External Locus of Control		
Powerful Others Locus of Control	17.7	<u>+4.78</u>
Chance Locus of Control	16.8	<u>+4.13</u>

Note. From the MHLC scale; range 6-36.

Table 6

Participants Identified as Exhibiting Internal Locus of Control, Powerful Others Locus of Control, and Chance Locus of Control (N=217)

Variable	Frequency	Percent
Internal Locus of Control	185	85.3%
External Locus of Control		
Powerful Others Locus of Control	24	11.1%
Chance Locus of Control	8	3.7%

Note. From the MHLC scale.

Table 7

Description of Health Promotion Lifestyle Practices of Air
Force Personnel (N=217)

Variable	Mean	<u>SD</u>	Weighted Score
Spiritual Growth	26.4	<u>+4.93</u>	2.9
Interpersonal Relations	25.6	<u>+5.43</u>	2.8
Nutrition	21.2	<u>+4.97</u>	2.3
Physical Activity	19.2	<u>+5.53</u>	2.4
Health Responsibility	19.1	<u>+4.63</u>	2.1
Stress Management	18.8	<u>+4.00</u>	2.3
Overall HPLPII Score	130.9	<u>+22.93</u>	2.5

Note. From the HPLPII. Spiritual growth, interpersonal relations, nutrition, and health responsibility have a range from 9-36. Physical activity and stress management have a range of 8-32. Overall HPLPII score has a range of 52-208. Weighted score has a range of 1 to 4. SD = Standard Deviation.

Table 8

Simultaneous Multiple Regression Analysis of Locus of Control and Health Promotion Behavior (N = 217)

Predictor Variable	B	Beta	Sig. <u>t</u>
Internal Locus of Control	.24	.04	.49
External Locus of Control			
Powerful Others Locus of Control	.41	.08	.21
Chance Locus of Control	-.93	-.16	.01

Note. R Square = .0323, F = 2.372, p < .07. From the MHLC scale and HPLPII instrument.

Table 9

Simultaneous Multiple Regression Analysis of Demographic
Characteristics and Health Promotion Behavior (N = 217)

Variable	<u>B</u>	Beta	Sig. <u>t</u>
Age	0.27	.08	.38
Gender	11.05	.18	.00
Marital Status	-2.25	-.11	.17
Ethnicity	-.63	-.02	.71
Income	1.55	.05	.50
Children Living at Home	3.45	.07	.33
Education	2.35	.15	.15
Military Rank	-1.25	-.16	.19
Hours Worked per Week	-4.69	-.14	.04

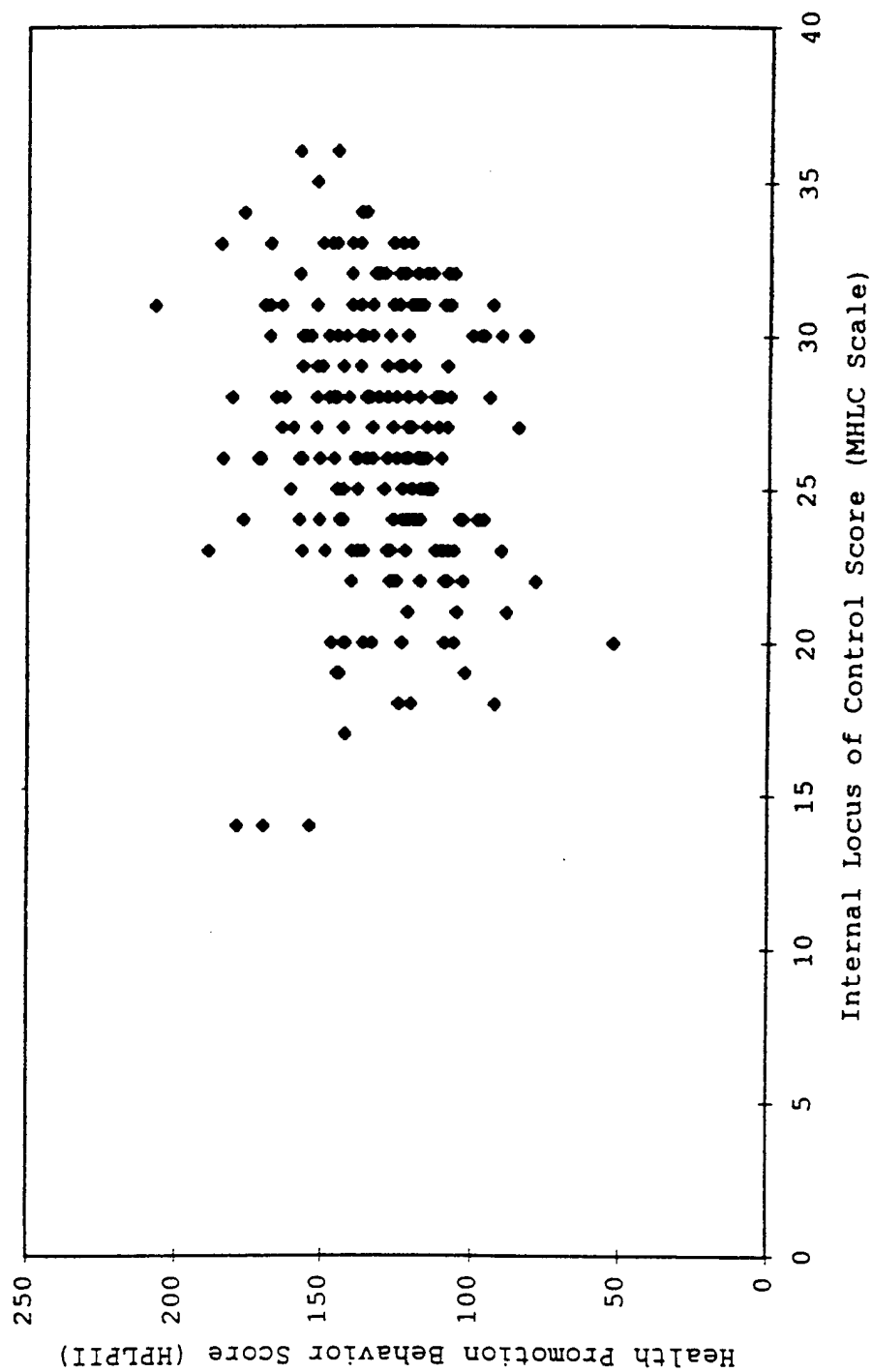
Note. R Square = .0974, F = 2.424, p < .01. From the
Biographical Data Sheet and the HPLPII instrument.

APPENDIX N

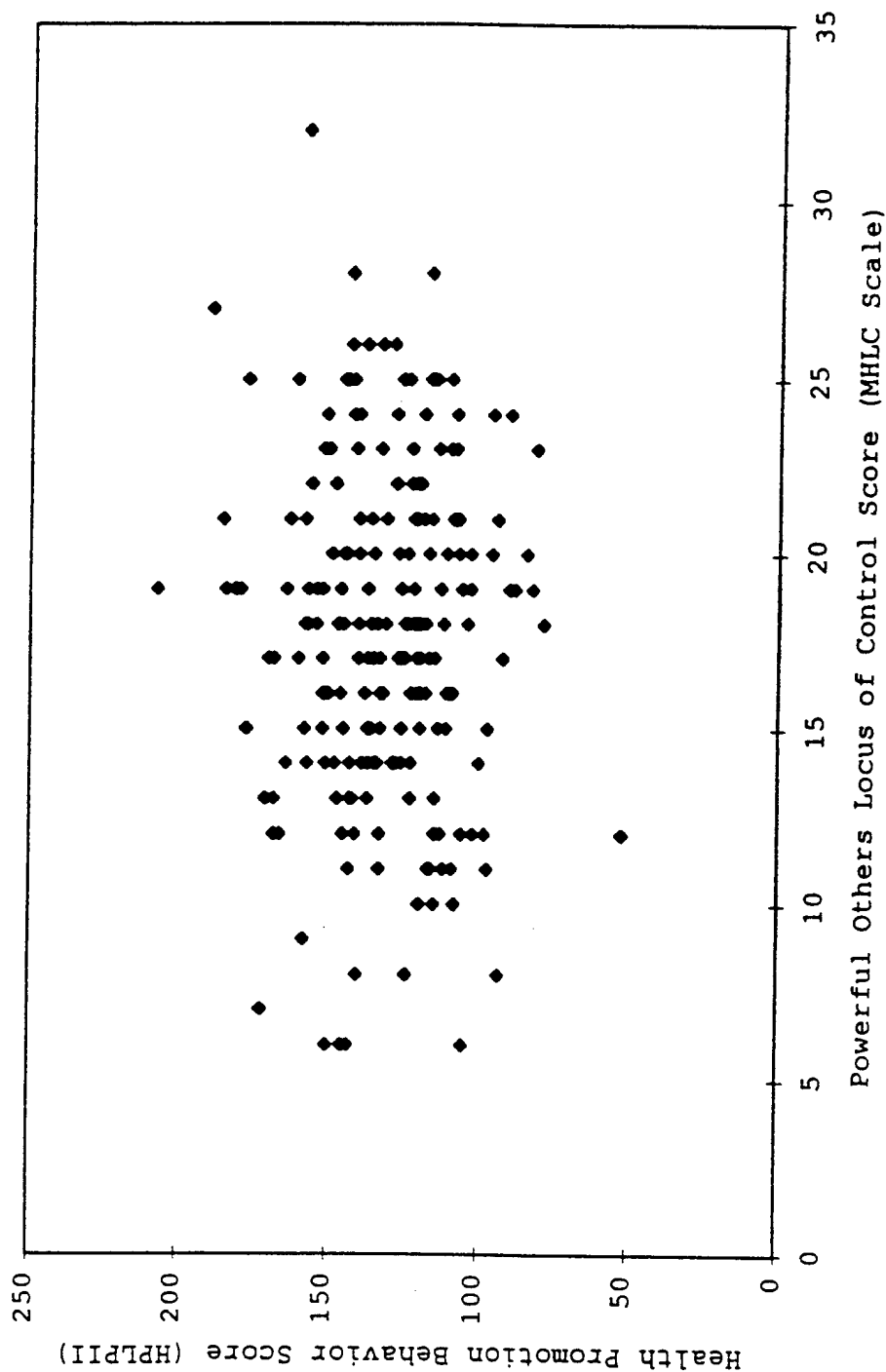
Scattergrams

Locus of Control vs. Health Promotion Behavior

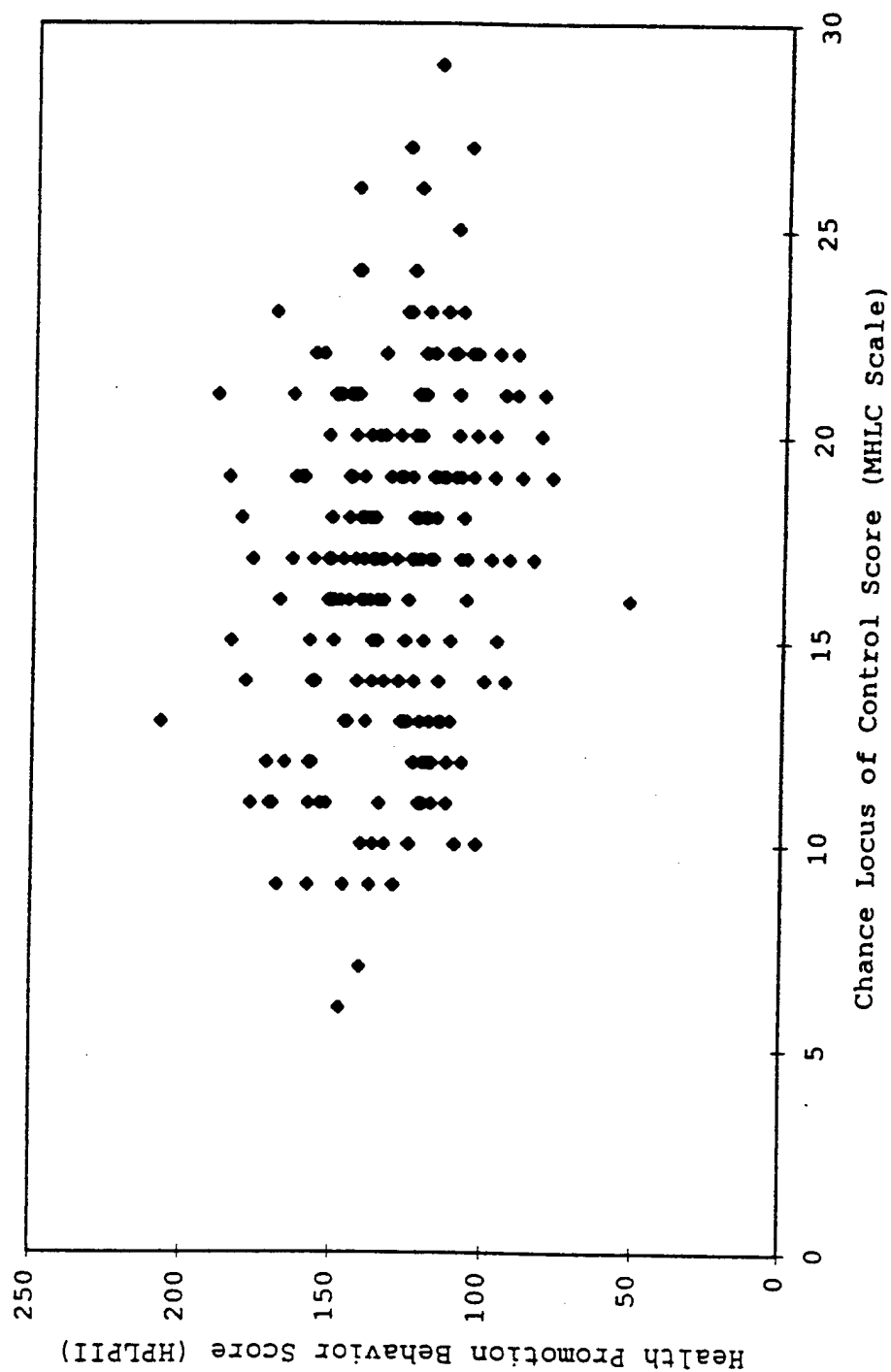
Internal Locus of Control vs. Health Promotion Behavior



Powerful Others Locus of Control vs. Health Promotion Behavior



Chance Locus of Control vs. Health Promotion Behavior

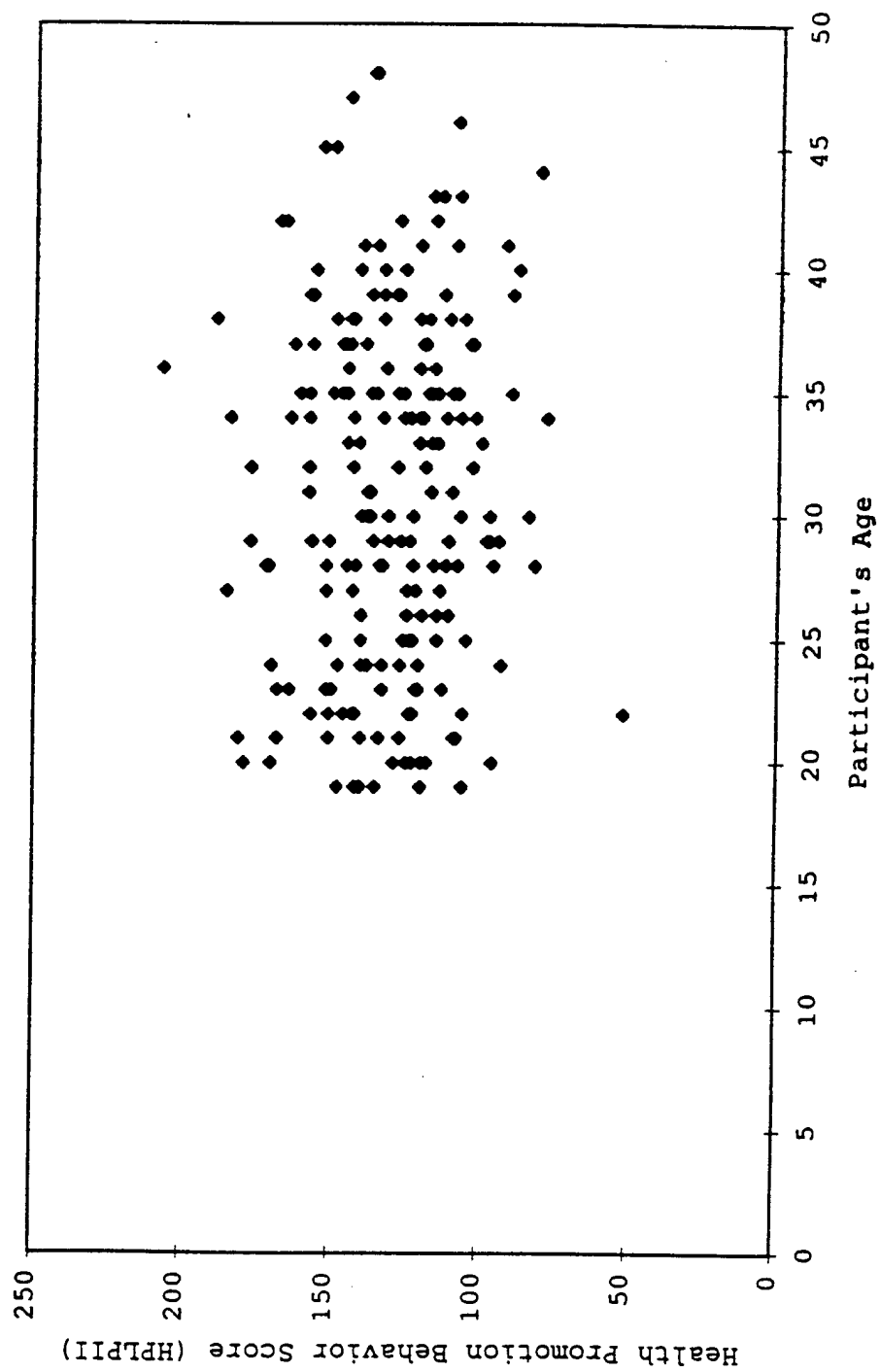


APPENDIX O

Scattergram

Age vs. Health Promotion Behavior

Age vs. Health Promotion Behavior



APPENDIX P

Air Force Demographic Characteristics

(From the Internet - www.afpc.af.mil)

Demographic One Liners

Demographic "One-liners" for Active Duty Air Force Personnel

- The purpose of the quarterly Demographic one-liners is to provide statistics and trend comparisons on a variety of demographic topics. These statistics are current as of DEC. 31, 1996

Force Strength

- Approximately 381,718 individuals are on active duty 75,794 officers and 305,924 enlisted personnel
- The Air Force has 14,762 pilots, 5,535 navigators and 36,400 non-rated line officers in the grades of lieutenant colonel and below

Age

- The average age of the officer force is 35, for the enlisted force it's 29
- Of the force, 33.14% are below the age of 26
 - 38.69% of enlisted versus 10.71% officer

Sex

- 16.71% of the force are women
 - 15.84% of the officers and 17.03% of the enlisted
- The population of women has increased from 33,000 (5.4%) in 1975 to 64,111
- Women first began entering pilot training in 1976, fighter pilot training in July 1993 and navigator training in 1977
 - Currently there are 320, 2.17% female pilots and 100, 1.81% female navigators

Race/Ethnic Group

- Racial minority representation has risen from 14% in 1975 to 22.74%
- 77.26% of the force are Caucasian, 14.87% Black, 4.02% Hispanic, and 3.86% Other
 - Officers: 87.8% Caucasian, 5.76% Black, 2.06% Hispanic, and 4.39% Other
 - Enlisted: 74.65% Caucasian, 17.12% Black, 4.5% Hispanic, and 3.73% Other

Marital Status

- 67.09% of the current force are married
 - 75.4% of the officers and 65.04% of the enlisted
- There are 18,378 military couples in the Air Force
 - 1,050 of these are married to members of other services

Dependents

- Active duty members supported 594,940 dependents

Demographic One Liners

- 502,540 are dependents-in-household

Overseas

- 20.69% of the current force are assigned overseas
 - 10,739 officers and 68,238 enlisted personnel

Total Active Federal Military Service

- The average total active federal military service is 11.14 years for officers and 9.27 years for enlisted

Academic Education

- 54.95% of the officers have advanced or professional degrees
 - 44.37% have a master's, 9.23% have professional degrees, and 1.36% have doctorates
 - 31.41% of company grade officers have advanced degrees-25.1% have a master's, 5.96% have professional degrees, and 0.35% have doctorates
 - 89.9% of field grade officers have advanced degrees-72.89% have a master's, 14.15% have professional degrees, and 2.86% have doctorates
- 99.99% of the enlisted force have at least a high school education
 - 78.46% have some semester hours towards a college degree
 - 13.21% have an associate's degree or equivalent semester hours
 - 4.22% have a BA/BS
 - 0.54% have a MA/MS

Component

- 68.1% of the officers have a Regular commission
 - 74.88% of the line officers have a Regular commission

Professional Military Education

- 63.31% of the officers have completed one or more PME courses
 - As their highest PME, 9,090 have completed at least one Senior Service School, 13,693 have completed an Intermediate Service School, while 25,204 have completed Squadron Officer School

Source of Commission

- 19.1% of the officers were commissioned through the Air Force Academy, 41.63% through ROTC, and 20.95% through OTC
 - The remaining 18.32% were commissioned from other sources (primarily direct appointment, etc.)

Term of Enlistment

- 30.32% of the enlisted personnel are serving in their first term of enlistment
- 19.67% are on their second and 50.01% are on their third or greater term of